INDUSTRIALISATION, RESIDENTIAL MOBILITY AND THE CHANGING SOCIAL MORPHOLOGY OF EDINBURGH AND PERTH, C. 1850-1900

Richard Lloyd Vaughan Southern

A Thesis Submitted for the Degree of PhD
at the
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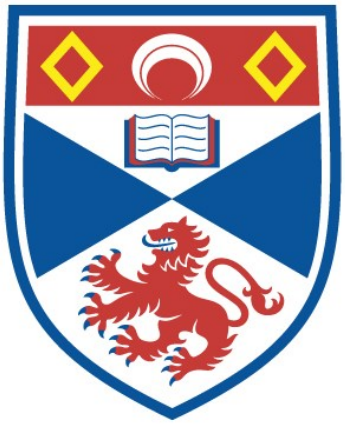

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INDUSTRIALISATION, RESIDENTIAL MOBILITY AND THE CHANGING SOCIAL MORPHOLOGY OF EDINBURGH AND PERTH, *c.* 1850-1900

By

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Dedicated to the the
Glory of the Holy and Undivided Trinity

and to the memory of

Henry Southern
1921-2000
and
Margaret Vaughan
1915-2000

Requiescant in pace

DECLARATIONS

1) I, Richard LLoyd Vaughan Southern, hereby certify that this thesis, which is approximately 98,000 words in length, has been written by me, that it is the record of work carried out by me and that it has not been submitted in any previous application for a higher degree.

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2) I was admitted as a research student in September 1995 and as a candidate for the degree of *philosophiae doctor* in September 1996; the higher study for which this is a record was carried out in University of St Andrews between 1995 and 1999.

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ABSTRACT

The aim of this research is to advance the understanding of the impacts of the industrial revolution on urban space during the period 1850-1900. This was a period of great dynamism with high levels of social and economic change, political radicalism and urban growth that had profound effects on the urban landscape. In contrast to much previous research on Victorian urban space, the case study settlements used are Edinburgh and Perth, Scottish burghs with diverse economies not dominated by a heavy industrial sector.

The analysis uses data from a variety of sources including the census, valuation rolls and the Register of Sasines. It also draws insights from structuration theory by examining the spatial outcome of various processes in terms of the reflexive relationship between structural factors such as class and capitalism and the residential movements of individuals (agents). Three scales of analysis are used. Thus, meso-scale socio-spatial change is seen as affected by both macro-scale structures and micro-scale actions of agents.

By constructing a series of maps and measures of the distribution of social groups at various times over the half century, the thesis demonstrates that socio-spatial differentiation increased markedly over the period. The processes driving this socio-spatial change are identified as the operations of the housing market, structured feeling and mobility. The detailed roles of each is examined. Together, it is argued these are the modalities which link structures and agents and are thus the proximate determinants of socio-spatial change.

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Abbreviations used in the text

Bt	Baronet
CBD	Central Business District
co.	Company
ECC	Edinburgh Co-operative Company
ED	Enumeration District
ed(s)	Editor(s)
I.U.P.	Irish University Press
LNM	Lower non-manual (social status group)
J.P.	Justice of the Peace
na	Not applicable/available
p.	Page number
PR	Pre-record (Sasines)
RC	Royal Commission
RRC	Report of the Royal Commission
SM	Skilled manual (social status group)
SUM	Semi- and unskilled (social status group)
UNM	Upper non-manual (social status group)
vol.	Volume
VR	Valuation Rolls

CHAPTER ONE

INTRODUCTION

> 'Visitors to Edinburgh in the latter half of the eighteenth century were generally struck by...the close proximity to each other of the different social strata [yet] by the end of the nineteenth century there was extreme spatial segregation of social classes. Thus, from a place remarkable for its lack of status and class segregation, the Scottish capital emerged as the most sharply divided of any British settlement for which we have appropriate studies.'

Elliott and McCrone (1980 pp. 1-3) depict a city of radical change over a relatively short period. They claim that Edinburgh, by the end of the nineteenth century, was transformed to a highly polarised city. In claiming this they draw attention to both the social and spatial segregation of social classes. If what they claim is true, Edinburgh was a city of dynamism and change. It is such change that is the concern of this thesis. Cities are not static and undergo change all the time. But what form does change take and how is it brought about? These are the critical questions of this work.

The changes in Edinburgh in the last century, noted by Elliott and McCrone, must be seen in the light of the industrial revolution - a period of great social and economic upheaval and one of structural change (Matthias, 1983). Numerous studies exist of the social and economic impacts of industrialisation,[1] but few are directly concerned with the spatial impact of such change within cities. The aim of this thesis, therefore, is to advance the understanding of the impacts of the industrial revolution on urban space by viewing them as the outcome of the reflexive relationship between socio-economic structures and the actions of human agents.

Of the research which does examine the spatial impacts of industrial change, most either considers the effects of structures within society as the primary force, or over-

[1] For a review of much of the industrial revolution literature see O'Brien & Quinault (1993) and Whatley (1997).

emphasises the role of agents by overlooking structural influences (see chapter two). This has created a dichotomy over the years between the determinist / structural and humanistic approaches. In order to bridge this dichotomy a 'third way' is needed which advances the idea that both structures and agents, inter-acting within society, engender spatial change. This thesis attempts the 'third way' insofar as it identifies the reflexive relationships between structures and agents and discusses the spatial impacts of these relationships.

In order to demonstrate the spatial impacts of change, it is necessary to be place specific. Thus, Edinburgh and Perth are selected as case study burghs. They will be introduced more fully later in chapter three. For now it is sufficient to remark that their choice has been based on a combination of factors which include the need to study cities which differ enough in terms of size and location, but are similar in terms of not being primarily industrial burghs. Indeed, for this latter reason these two burghs have hitherto been overlooked in much work on industrial Scotland. Nevertheless, it is argued in this thesis that the spatial impacts of socio-economic change within Edinburgh and Perth were significant and probably as great as those experienced by industrial burghs such as Glasgow and Dundee.

The empirical analysis of this thesis will, therefore, focus on change in two settlements over the last half of the nineteenth century, but will do so recognising that they were part of an urban network. Analysis draws on a number of statistical and descriptive techniques, but also makes considerable use of qualitative material in order to assess the extent to which socio-space changed and the form this took. Conceptually this thesis focuses on structures *and* agents, and in particular on their 'reflexive relationship'. Specifically, insights from Anthony Giddens' Structuration Theory will be used to underpin the research as this, more than any other recent theory, has attempted to bridge the determinist / humanist dichotomy.

Giddens' Structuration Theory is formulated with a view to building upon the strengths, while avoiding the weaknesses, of certain theoretical orientations in the social sciences (Thompson, 1989). Giddens seeks to move beyond a reliance on structuralism, functionalism or humanistic research by rethinking the notions of, and the reactions between, action and structure. Instead of seeing action and structure as the counter-acting elements of a dualism, they should be regarded as the complementary terms of a duality. By the 'duality of structure' Giddens means that socio-economic structures are simultaneously constituted by human action and yet are the medium of this constitution. This means that every act of production is at the same time an act of reproduction, hence the recursive character of social life. Thompson (1989 p. 58) believes that Giddens' Theory of Structuration is 'an attempt to tease out the threads that are woven into this apparently unproblematic fact'. Unsurprisingly there are a number of problems associated with Giddens' Theory, not least with its empirical applicability (see below). In attempting to find a 'middle ground' between structural determinism and liberal humanism, Giddens leaves himself open to the criticism that he is compromising the 'purity' of other approaches. For instance, more traditional Marxist approaches challenge his definition of a structure in terms of rules and resources and suggest that the theory cannot adequately cope with notions of class struggle. However, given the humanistic critique of structuralism (and structural Marxism) as denying a moral dimension in human behaviour (Graham, 1997), it would seem imperative to adopt a conceptualisation of human agency which is not entirely deterministic. A further problem lies in the extent to which Giddens' makes a convincing case for his key theoretical propositions. The alleged dominance of authoritative power and the overuse of his structure of 'signification' (when he states that the three structures he identifies should be equally important) are points raised by early critics and summarised by Chouinard (1997). The theory has acted too descriptively or too generally rather than as a substantive conceptualisation of the processes of social change. However, Giddens has subsequently addressed many of the early criticisms (Giddens, 1989) but has not attempted to 'apply his theory in any conventional way' (Gregory, 1994).

Giddens (1982) maintains that researchers ought to attach equal importance to human agency and social structures and thereby attain a more comprehensive conceptual framework for research. Indeed, he would urge that structure and agency should not and cannot be separated as they continuously reproduce each other (Thrift, 1985). Giddens has termed this process the 'duality of structure'. Structures exist only because agents enable them to. For instance, there would be no capitalism if workers did not reproduce its structures every time they engage in their daily work routine. Yet, agents will be constrained (or conditioned) by the structures within society which they willingly or unwillingly perpetuate. The Theory of Structuration has been widely debated but has been used by a number of geographers to inform both theoretical and empirical enquiry (the latter less so than the former).[2]

Structuration Theory differs from other theories which examine the structural relations in society as it separates the concepts of structure and system (Giddens, 1982). This separation is important because the systems embody the reproduced relations between actors (or collectivities), organised as regular social practices and situated within time and space. Structures exist as recursively organised rules and resources that individuals draw upon and reconstitute in their day-to-day routines. Unlike systems, these structures do not exist in time-space, but have only a virtual existence, in that they are drawn upon and reconstituted consistently in practice (Moos and Dear, 1986). Structures, then, are both the medium and outcome of the situated actions and practices that make up the system. The structural properties of the system are characterised by those aspects of structure inherent in all agency interaction: Giddens (1984) calls these, signification, domination and legitimation. They can be employed empirically as figure one (below) illustrates. Giddens' Structuration Theory has not often been used as a conceptual framework for empirical analysis and is viewed by some, such as Gregson (1987), as a second order theory. By this she means that the theory is concerned with the ontology of human society. Thus, Structuration Theory is 'sited at a higher level of

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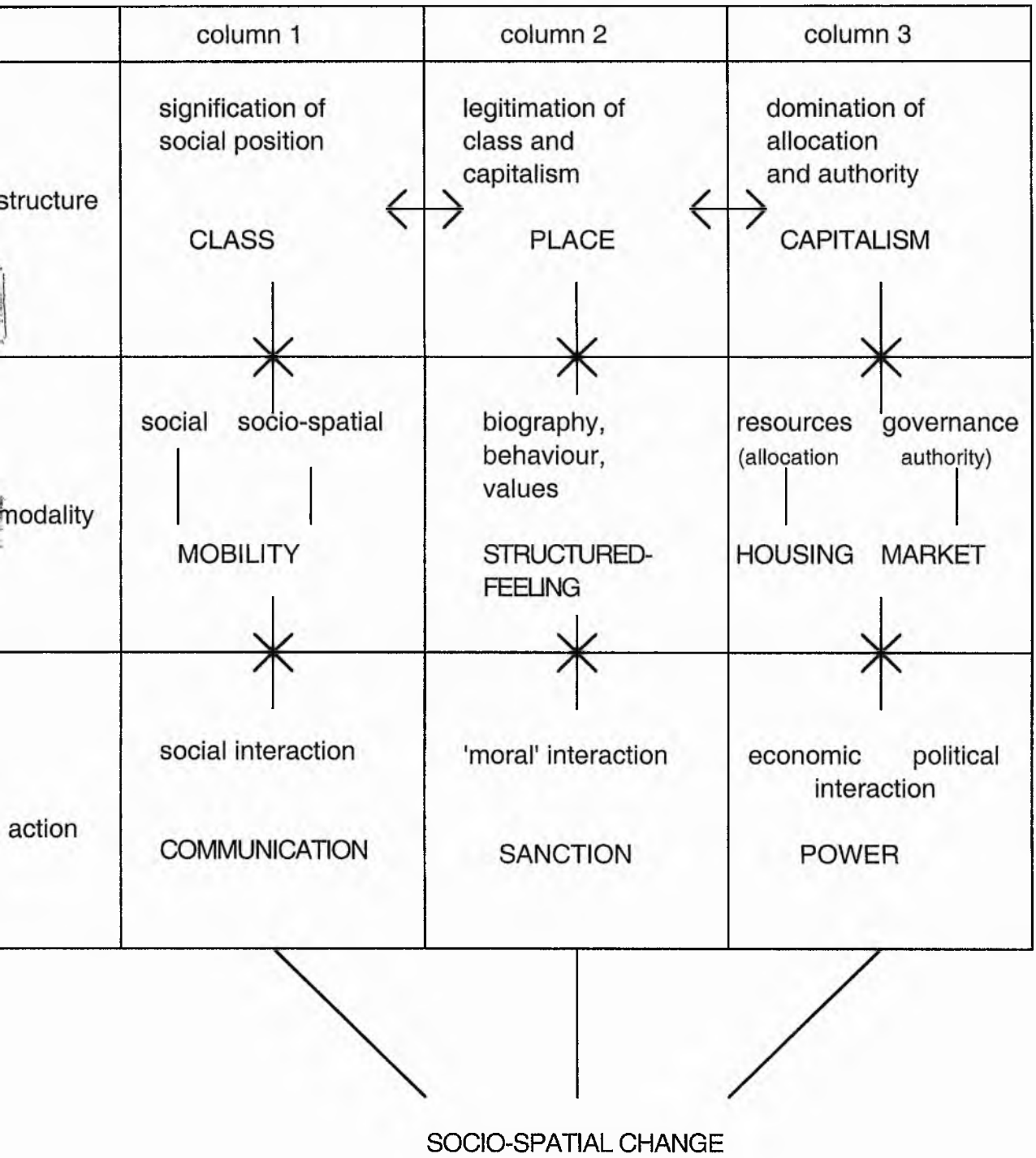
[2] Indeed, Giddens has received criticism by some for not being empirically sensitive, yet despite this there have been a number of attempts recently to show that structuration theory can be applied empirically (Dear and Moos, 1986; Moos and Dear, 1986).

abstraction than the events or contingencies of particular periods and places which constitute the domain of empirical enquiry' (Gregson, 1987 p. 80). This questions the applicability of structuration theory to empirical work. Giddens (1976, 1984) himself makes a very clear conceptual distinction, or separation, between theory and empirical work - indeed, to him they are separate enterprises, although empirical work can employ theoretical concepts.

Gregson's criticism might go some way to explain why there have not been, to date, many attempts to utilise Structuration Theory in the specifics of empirical analysis within geography. Although this thesis cannot claim to close the gap between second order theory and empirical research, it does use insights from Structuration Theory to frame the empirical analysis

Thus, this thesis is more than a snapshot of two cities in the late nineteenth century. Conceptually it takes ideas from the wider intellectual discipline of geography (and the social sciences) and uses them in the analysis of a specific geographical question about changes in urban socio-space. The research employs ideas of structure / agency interaction in order to aid the explanation of socio-spatial change in late nineteenth century Edinburgh and Perth, but it is primarily empirical in that it focuses on the detailed investigation of historical data. It also draws upon a range of previous research from inter-related disciplines including geography, economics, sociology, and history. The main task of this introduction, however, is to elaborate the conceptual grounding of the thesis in order to demonstrate its relevance to the empirical research question which lies at its centre. Figure one (below) sketches a conceptual framework based upon Giddens' (1982) stratification model (see Gregory, 1986 p.465), which incorporates this structure / agency interaction mediated by modalities resulting in socio-spatial change. Within this structuration grid socio-spatial change is seen as the outcome of interactions between these structures (class, place and capitalism, in row one) and three aspects of agency activity (social, moral and economic / political interaction in row three).

FIGURE 1 - THE STRUCTURATION GRID



Each structure has a corresponding system of action. These are 'linked' to each other by 'modalities'. The modality is the 'means of interaction' (Gregory, 1986). For instance, in figure one, social interaction of agents is viewed in the form of social and socio-spatial mobility operating within, but constrained by class.[3] In column one the structure of 'signification' is identified with class (the signification of social position). The interaction which uses this structure and perpetuates it is social interaction (communication in the model). Social interaction can be thought of as the everyday dealings of and between agents. Over the course of the nineteenth century such dealings were to change. This, it is argued, took place within the class structure superimposed upon the social interaction. At the same time, class was being reproduced by the social interaction of agents.[4]

The modality by which the duality of class operated was mobility, which had both social and social spatial dimensions. Chapter six in this thesis will show how it was through the movement of agents that social-spatial segregation was facilitated. Social mobility meant that individual status groups were emerging whereby an individual agent was increasingly differentiated from his or her neighbour. Social mobility became important and certain groups within society experienced it more than others. This, in socio-spatial terms, meant individuals were increasingly likely to move to areas, or have houses built in areas, where the residents (one's neighbours) were of similar status. Already there are links emerging with the elements in the other columns, which is precisely what Giddens (1982) anticipates.

The structure Giddens refers to as domination is represented in column three. Here it is interpreted as a domination of allocation and authority within a capitalist structure. Giddens states that domination depends upon the mobilisation of two distinguishable types of resource - allocative and authoritative. Allocative resources refer to command

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[3] Modality is the term adopted by Giddens (1984) which serves to clarify the main dimensions of the duality of structure involved in interaction. Thus, actors will draw upon the modalities of structuration in the reproduction of systems of interaction - this has the effect of reconstituting their structural properties.

[4] Within Edinburgh and Perth, the social interaction which took place not only accentuated class differences between different groups but precipitated socio-spatial segregation.

over objects (transformative capacities) and authoritative resources to command over persons or actors. In nineteenth century Edinburgh and Perth (as well as at other times and places) domination can be thought of in terms of political and economic dominance. In this way structuration theory can be applied to a specific type of dominance within a specific economic and political system, namely capitalism, but could be equally applied to socialism, communism and feudalism. In figure one, dominance is seen in terms of the housing market, as this modality has the most important impact upon social segregation in nineteenth century cities (Short, 1996).

In a capitalist system the capitalists wield the political and economic power over the capitalised. While this continues, power is being used and power relations maintained and thus the perpetuation of dominance. In the context of nineteenth century cities, one way of viewing the power relation at work is to consider the housing market. The allocation of housing and the authority (control) over it are key determinants of the socio-spatial form of the city. This can be illustrated by considering the feudal superior - an urban gatekeeper. He, for it was usually a man, could exercise control over what was built on his land, often resulting in the exclusion of certain groups within society. The result was the creation of housing areas of high social status. The movement (and thus the link with concepts in column one) of high class people to these new 'social' housing areas often meant that the areas they vacated declined in status. The people who remained in these areas probably had less choice about where to live than those who had left, marking an involuntary outcome of the operation of structural processes in the housing market. This serves to illustrate the ways in which interaction between structures and agents engenders socio-spatial change. Chapter four outlines the ways in which the housing market impacted upon socio-space, in particular the ways in which agents acted within the housing market.

Furthermore, there is another way in which power, or rather power relations, can affect social space. Pred (1983) suggests that previous agency interaction shapes and transforms urban landscapes (within structures). Newness and decrepitude are

therefore based on the outcome of previous projects or previous path convergences and divergences involving agents. This can be thought of as economic and political interaction between agents with different levels of power (control) over the urban landscape. Thus, social segregation in Edinburgh and Perth can be viewed in terms of historically specific power relations between agents (and collectivities and institutions) that determine which transformations take place, which way resources are employed, and which humanly created elements of place flourish or fall into disrepair. Power relations cannot therefore be separated from realms of action; they exert an influence over what people do and how they act. A consideration of power relations helps to explain why some areas in Edinburgh and Perth were selectively downgraded and others flourished into salubrious suburbs as will be seen in chapter five.[5]

In his model, Giddens (1982) places the structures of signification and domination next to each other. The framework illustrated in figure one modifies his model by placing his third structure, that of legitimation,[6] between the other two. This allows a common link to be made between the mobility process and the housing market. Similarly, class and capitalism can be linked, as can social interaction and political and economic interaction, through moral interaction. Thus, the three aspects of legitimation identified (place, structured feeling and sanction) allow the structures, modalities and interaction to be linked by adding a specificity - that of time and place. This is absent from Giddens' model, and receives the opprobrium of Gregson (1989), amongst others.

Using the grid to expand upon this point, row one shows class, place and capitalism. 'Place' within the capitalist system of production and 'place' within the class system has normative and psychological aspects. Individuals begin to see themselves placed

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[5] The housing market is the example most closely related to socio-spatial segregation but other markets could easily have been substituted by way of an example. The use of consumer goods, for instance, would illustrate a further link between the middle classes and social aspirations in terms of consumerism: a factor very much at work in Edinburgh in the later nineteenth century.

[6] Giddens believes that what is legitimate and what is not in social interaction can be structured by this legitimation. Actors are therefore sanctioning themselves in terms of their behaviour through moral rules (moral interaction). Theoretically Giddens explains this through 'normative regulation'. This implies that one individual's behaviour could differ from a second. Thus, when regulation is seen as a modality the link between mobility and the housing market is revealed.

within society, belonging to a particular group and this placement is related either to position in society or to the production process (the two became largely interchangeable in the nineteenth century). Such perceptions are based upon behaviour, values and biography. Pred (1983) calls this structured feeling. By this he means people of similar 'place' or position in society generally have the same values, behaviour, morals and aspirations. These are the normative regulations that act as the modality which conditions the perpetuation of place.

Social mobility and socio-spatial mobility, as already stated, is undertaken within the class system, either voluntarily or involuntarily, based on values and aspirations. Chapter five shows how nineteenth century urban gatekeepers played on such values and supplied the houses demanded by social groups of particular aspiration or perceived social standing. Perhaps, the place for such 'regulations' is best fitted between the modalities of mobility and housing market. Furthermore, the structure of legitimation fits well between class and capitalism because a class structure emerged from the capitalist production process. Put another way, the existing pre-capitalist social structure (class structure) would have accommodated the emerging capitalism. The landowners became capitalists, albeit 'sleeping ones' as the new middle class enablers managed the capitalist's capital. The workers (previously largely agrarian) transferred to the factory and mill systems through the process of urbanisation and became the capitalised. Thus, the existing 'class' structure was (re)placed within the emerging capitalist economic system. This reciprocity is linked by the 'place' - the legitimation - and as such legitimation as a structure fits between the other two.

In terms of the social system, the interaction Giddens calls 'sanction' refers to agents applying, consciously or unconsciously, checks on their actions. This is done by drawing upon social norms (normative regulations) that can be analysed at the level of structure as moral rules (Cloke *et al.* 1991). Legitimation is used by agents to sanction their actions and thereby recreate the legitimation.[7]

[7] The point is that actions are given legitimation by moral rules, thereby (re)producing legitimation as a structure.

Individual agents will sanction their social interaction according to the power they hold. Action is sanctioned through behaviour and values. These will vary according to position within society and the power that an individual wields. Further, figure one incorporates additional concepts, those of biography and structured feeling. These will be expanded upon presently. Finally, action draws upon normative morals and behaviours and perpetuate one's place, legitimising class and capitalism. Legitimation as a structure, but more directly sanctioning action, leads to social segregation as it perpetuates 'place'. Social segregation results as the behaviour and values of social groups precipitate socially exclusive areas - people will want to live near other people of the same or similar views, aspirations, social status and so on.

Pred (1983) identified a weakness in Giddens' Theory of Structuration as the lack of attention paid to the sense of place of individual actors within the system. He therefore sought to correct Giddens' omission by considering an agent's sense of place within structuration theory. Further, because an individual's actions will be based on his or her 'structured feeling' of a place or position, place, in turn, is linked to an individual's biography. Halfacree and Boyle (1993) maintain biography is important in the study of migration; it is also essential in the study of place (Pred, 1983).

Figure one suggests that mobility, as a modality, works within and is constrained by the class structure as a system of agency interaction. Furthermore, the decisions taken by agents to move are sanctioned by a series of 'structured feelings'. It is difficult to ascertain precise reasons why individuals move without detailed personal accounts, but many individuals appear to move as part of a solidaristic process. The implication of this is that the individual migrant's decision making is influenced collectively by the social group he or she is in. This is where 'biography' is important, since individual decision making, whether as part of a group or not, leads to an emphasis on the experience and context of migration (Findlay and Graham, 1991). Migration, moreover, reveals one's values and attachments (Fielding, 1992). But in

structurationist terms, these values and the individual decision making must be seen in the light of the prevailing structures within society. This takes on significance when migration is considered part of the everyday experiences of individuals within a structured society. Consequently, migration analysis ought to reveal something about the social structure and how it is affecting individuals.[8]

In figure one mobility is divided into two types, social and socio-spatial: both affected social segregation and must therefore be 'intimately associated' with each other (Halfacree and Boyle, 1993). As one becomes socially mobile, one is inclined to want a better residence, away from those perceived to be socially inferior. This behaviour (social interaction mediated by migration decision) both uses and perpetuates the class structure of society. It can be extended across the grid in figure one to take in an agent's values and placed within the context of the housing market responding to the values of the mobile population.

Pred (1983, 1984) argues that sense of place may be the igniting force for a move. It might also be the stimulus to which urban gatekeepers respond - a member of the middle class may feel 'out of place' in say, an industrial area, so may move to a newly created middle class area.[9] Examples within Edinburgh and Perth will serve to highlight this. Pred states that one's sense of place is determined by one's life path. One can feel a sense of belonging to an area - what Relph (1976) has called an authentic sense of place - or have no sense of place.[10]

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[8] This can be illustrated by using work by Fielding (1989) on service-class migrants in the south-east of England. Fielding discovered a high level of mobility amongst members of the service class and those moving into the service class. From this he postulated that geographical mobility is associated with social mobility (to belong to the service class means a high degree of residential mobility), although this was not without criticism (see Savage, 1988).

[9] It seldom works from below as the poorer classes were often not in a position to move - people of higher perceived social rank moved away from them.

[10] An authentic sense of place will be built unconsciously on attributes and settings (structures no less). This structuring of place allows place to be conveyed within a historical, social and biographical context and not as a product of an autonomous mind. Pred (1983) believes place cannot be separated from past social interaction provided by family, school, work and so on. As such place must be interpreted in terms of time-space specific daily practices by which it becomes a part of biography along with other elements of consciousness and socialisation. This means, therefore, that an individual's sense of place needs to viewed through the prism of structuration theory, since the place being 'sensed' is not something frozen but a continuously becoming by-product of individual (and collective) participation in the time-space flow of the structuration process.

The physical features of a city like Edinburgh can construct, maintain and sculpture place and are the consequences themselves of specific goals and intentions based on ideology at a previous or existing time. These ideologies (macro-level structures), such as capitalism, interact with (micro-level) experience, through such things as residential decision making, to construct a 'middle' or spatial expression of both values and daily routine. This is visible at the meso-level (that is in the urban structure of a city such as Edinburgh) as chapter five will show, revealing the impact that (meso-scale) structures and structural change (as well as meso-scale agency action) had on the social segregation of micro-areas. This illustrates the inter-woven dynamics of the grid in figure one, and suggests how interaction uses and recreates structures with spatial impacts. However, the question arises, at what scale should the spatial impact be studied?

The interaction of structures and agents, it is argued, lies at the heart of socio-spatial change. This change is manifested differently at different geographical scales: nationally (the macro-scale), agents respond to the structures of industrialisation and urbanisation as in- and out-migrants. In the nineteenth century, most migrants moved from rural areas to urban settlements. The result of national interaction was urban population growth and the industrialisation of burghs. This had the national spatial outcome of a change to the settlement pattern of Scotland as discussed in chapter four. The structure / agency interaction at the national scale, however, feeds through to the processes of interaction at lower scales, and thereby demonstrates the inter-relatedness of the different levels of socio-spatial change - for instance, urban population growth gives rise to increased class consciousness, a point Durkheim (1933) and Wirth (1938) have both elaborated. Thus, the industrialising town, experiencing population growth and increasing class consciousness, takes on a new urban morphology which is the socio-spatial outcome at the meso-scale. The factors of change are examined within Edinburgh and Perth. These meso-scale factors are essentially structural in form (for instance, the housing market, class consciousness, and industrialisation). Their impact

upon micro-areas is then examined to show how small areas are influenced by the meso-scale factors operating within the city. Finally, since structural factors alone did not drive change, the impact agency factors (residential decision making and mobility) had on the socio-space of the cities is considered. This brings the analysis full circle as the ways meso-scale factors influenced micro-areas space are considered as well as the influence of micro-scale factors on meso-scale space. This ably demonstrates the recursiveness and dualities intrinsic to the structuration process.

The conceptual framework outlined above prompts a number of observations which guide the empirical discussion. Data limitations and time constraints restrict the scope of the investigation and not all aspects of socio-spatial change can be explored. Edinburgh and Perth represent two out of the many hundreds of burghs in Scotland. The question of the whether the two burghs are representative of Scotland does surface, but the research is focused on socio-spatial change, and to this end any burghs could be chosen as case studies to show and explain socio-spatial dynamics in late nineteenth century urban Scotland (see chapter three).

The first observation concerns the fact that Giddens' abstract Stratification Model, on which figure one is based, has been modified and applied contextually. Place specificity is added when figure one is used to frame empirical analysis. The spatial impacts of socio-economic change can therefore be examined in selected cities at selected times, but also using actual people or groups of people, such as classes. In other words, the fact that figure one can be applied to a place allows the development of socio-spatial analysis.

On first consideration, the term socio-space seems relatively straightforward, and one that is widely used by researchers in many disciplines, notably geography and sociology.[11] A definition provided in the *Dictionary of Human Geography* states that socio-space is 'space as it is perceived and used by social groups' (Johnston *et al*,

[11] For example, Duncan and Duncan (1955); Beshers, (1962); Pritchard (1976); Cowlard (1979); Erdmann (1988).

1994, p.568). This simple definition, however, causes difficulties - for, how is a social group defined? Buttimer (1969) suggests that it is a homogeneous group with similar, if not identical, socio-economic (or demographic) characteristics, sharing the same values and attitudes. Buttimer claims that a social group - needed to define a social area - is itself defined by a series of characteristics, usually socio-economic. Moreover, she suggests that demographic and lifestyle variables may also be used. But, which of these variables does the researcher choose? In this thesis, the patterns and dynamics of change of socio-space in two late nineteenth century Scottish cities are examined, and research of this kind should therefore focus on the social groups of Victorian Edinburgh and Perth because what constitutes a 'social-group' will differ over time and place (Dennis, 1984 and see chapter three).

Socio-space must be considered in both objective and subjective terms for a full study (Chombert de Louwe, 1952): considering just one of these approaches will overlook an important dimension - the personal dimension when the objective approach is adopted, and the physical dimension when the subjective approach is used. The former approach is concerned with the spatial frameworks within which groups live, that is the spatial setting with its physical boundaries, built form and communications networks (Buttimer, 1969), while the latter approach stresses the perceptions of socio-space through values, class, aspirations and culture. According to Chombert de Louwe, neither approach, used independently, provides a complete study of socio-space.

Chombert de Louwe was a sociologist and ethnologist whose interest in socio-space was derived from earlier work by a geographer, Maximillien Sorre, who in turn was influenced by the nascent work on the subject by Durkheim. The latter was interested in social differentiation and initially viewed it purely in social terms - separate from a physical setting. Sorre (1943) questioned this, and in his studies of Paris pointed to many instances where physical conditions influenced social differentiation. He chose to use Durkheim's term 'social space' as an inclusive term for both the social and

physical environment.[12] Buttimer (1969 p.419) believes Sorre envisioned socio-space as a mosaic of areas, 'each homogeneous in terms of the space perceptions of its inhabitants'. Within each area were foci of a social movement - a church, theatre, school and so on. Each group had its own specific social space reflecting its own set of values. It was this "unorthodox" geography which was to inspire the sociologist Chombert de Louwe. The conceptual development of socio-space is therefore rather intriguing and interdisciplinary.

The study of urban socio-space and residential differentiation is a well-established area of research within geography. This thesis aims to add to this literature while recognising the inter-disciplinary roots of such analyses. It also suggests a more integrated approach to socio-spatial study, namely one that emphasises both structural and agency aspects of change. In chapter two a review of relevant literature is carried out by identifying several broad approaches in socio-spatial research and the thesis takes different inspiration from each of these. In so doing it is recognised that each approach has tended to stress one aspect of socio-spatial change, or one scale of analysis, or focused on one reason for change. Few studies have employed a conceptual framework that views socio-spatial change in the nineteenth century as directly attributable to structure / agency interaction at different, yet interrelated, scales. In this thesis, the changing social morphology of cities in nineteenth century Scotland is viewed as the outcome of a complex concatenation of structure / agency interaction at the national, urban and local levels: each dependent on the other for their ultimate socio-spatial characteristics. Furthermore, it is shown that the mechanisms of and rationale for socio-spatial change were equally scale dependent and equally inter-related through these scales.

This point about scale relates to the second observation from the structuration grid, namely that the major concepts within figure one can be applied at different

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[12] Although Durkheim uses the term 'social space' in this thesis 'socio-space' is used. The two are largely interchangeable, but it is felt here that 'socio-space' has a more geographical meaning than social space which is found mainly in the sociological literature. Furthermore, with socio-space there is less confusing over the term as it implies the social and the spatial are inseparable (see Soja, 1989).

geographical scales. National settlement pattern change will result at the macro-scale and socio-spatial polarisation at the micro-level, and both of these changes ultimately lead to changing social morphology at the urban level. This is shown using Edinburgh and Perth. The three manifestations of socio-spatial change are at once seen to be inter-related due to the interaction of structures and agents operating across scale boundaries. Furthermore, since the burgh (the meso-level) is an integral part of the Scottish urban hierarchy its internal spatial structure ought to be affected by changes in population, in-migration and levels of industry, all of which affect a burgh's position in the settlement hierarchy. Moreover, the burgh is also composed of smaller units, some arbitrarily defined, others more visible spatially through fixation lines. Changes to these spatial units through increased social polarisation, will ultimately affect the overall spatial pattern of the burgh and hence create a new social morphology. Thus, at the meso-scale the new social morphology is the manifestation of socio-spatial change.

The final observation that can be made about figure one concerns the fact that the outcome of the inter-related processes of structure and agency over time result in social segregation. This is more specific than the term socio-spatial change. The latter implies a simple snapshot at a given point in time. The former, however, implies a process. Social segregation is an on-going urban dynamic. This distinction is important, albeit rather subtle. The implication of this distinction is that the interaction of structures and agents was an on-going process. It was not a once-and-for-all happening, as Giddens' more abstract model might be thought to suggest. Indeed, this fits with the recursive nature of the structuration process. Structures are reproduced by agents each time agents use them or make decisions constrained by them. Such recursiveness, it can be argued, is sure to lead to urban dynamism. The empirical analysis presented later in this thesis will outline this.

Thus, in the following chapters the observations drawn from this conceptual framework give direction to the discussion and analyses. The methods employed and sources used are outlined in chapter three. The empirical chapters begin with chapter

four which falls neatly into two sections. The first asks how socio-spatial change was manifested at the macro-scale. This is answered using a constructed urban hierarchy and data from the Victorian census. The second part of the chapter then asks how national changes affected the internal spatial morphology of Edinburgh and Perth, linking the macro- to the meso-scale. Chapter four will then establish the extent of city-wide socio-spatial change before chapter five examines in more detail the factors of change and their effects at the micro-scale. Chapter six concludes the study with a detailed examination of the ways in which micro-scale activity effected socio-spatial change.

By employing a number of different approaches and scales of analysis, the thesis provides a more holistic view of socio-spatial change in the late nineteenth century: a period of political and economic upheaval and social change; indeed, a crucial period of dynamism that shaped modern Britain. A good deal has already been written about the Victorian city but, as will be seen in the next chapter, there remains considerable scope for further research.

CHAPTER TWO

APPROACHES TO URBAN SOCIO-SPATIAL STUDY

2.1 INTRODUCTION

The topic of urban socio-space is one that has occupied the geographer's attention for many years. Consequently, a considerable literature has amassed which is both wide-ranging in its scope and diverse in its conceptual grounding and methodological approach.[13] It is the aim of this chapter to examine some of this literature. This is done by arguing that existing work has tended to examine socio-space in a one dimensional manner; for instance, at one scale, or focused on one aspect of change. Consequently, as Butlin (1993) rightly identifies, important aspects of socio-spatial change are overlooked.

Chapter one has already explained that, in this thesis, analysis is carried out at three scales to examine the changing social morphology of Edinburgh and Perth. Moreover, using insights from structuration theory as a means to help explain socio-spatial change, this thesis shows how the three scales of analysis are conceptually and empirically linked. This enables an integrated approach to research. For instance, it is argued that individual decision making at the micro-scale was affected by the macro-scale structures prevalent in late nineteenth century society. As a result, the research in this thesis acknowledges that more than one structural influence affects socio-spatial change. In this respect this thesis differs from much of the existing research which is often either deterministic or humanistic in its approach. This thesis aims at overcoming the determinist / humanist dichotomy in the social sciences by attaching equal importance to human agency and social structures and thereby attaining a more comprehensive conceptual framework for research.

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[13] See Dennis (2000) and Butlin (1993, chapter nine).

In the review of literature which follows, four broad approaches have been identified which have contributed to spatial studies within geography and the social sciences. Few researchers have tried to overcome this dichotomy. Despite this, there are a number of insights which are pertinent for the present study, in the sense that it is believed that they should not be separated as they continuously reproduce each other (Thrift, 1985). This is the duality of structure / agency, rather than the dualism, which has heretofore been so prominent. The insights from the four approaches discussed below attempt to clarify how authors have dealt with structures and the actions of agents and the effects on socio-space. From this, the place of this thesis amongst existing work can be discussed and evaluated.

2.2 THE BUILT FORM APPROACH TO SOCIO-SPACE

Although Conzen must be regarded as the researcher who has done most to advance research on the built from of cities, Whitehand (1999) has recently claimed the study of built form, or urban morphology, is an hundred years old and owes its birth to Otto Schlüter in 1899.[14] The urban morphology school is concerned with the meso-unit, the town, and within this it is the physical and built aspects that are stressed in terms of form, function and history. Even when the micro-scale is considered it is the built form rather than the socio-space which is stressed (Slater, 1990). Researchers into the built form of the city employ the most deterministic of all the approaches considered in this chapter. This is due to their view that it is a combination of form, function and connectivity which shapes a town, and that this 'tripod' is based on economic or political structures at a particular time or place. Such structures are believed to constrain the action of urban planners and builders, who have little freedom over planning and decision making outwith these constraints.

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[14] Whitehand argues that the urban morphology school owes its beginnings to the publication of two highly influential papers by Otto Schlüter (1899 a & b).

The urban morphological school is concerned with what shapes the town, and to a lesser extent how. Many factors are cited, not least history (Conzen 1981a). It is undeniable that towns change through the course of history whatever their origin (Aston and Bond, 1976). This change will affect the internal structure of the town and create a new appearance, as people and industries arrive, others leave, roads are laid out, houses are built, older houses are demolished and so on. The particular focus of the urban morphologists is on the way in which the built environment of the town is shaped by occurrences in the past. Little attention is paid to agency activity or social relations.

In a study on social morphology, the work of the urban morphologist might be considered somewhat superfluous, until one considers that the physical layout and the built form of the city will play a significant part in an individual's sense of place (see below). Thus, the way a town is laid out becomes a locus of personal identification (Crang, 1998). Of course, this aspect of 'morphology' is overlooked by the urban morphologists, although they do recognise the human impact upon the urban environment in terms of housing, burgage plots and highways (Hall, 2000). For the present review it is important to emphasise the relevance urban morphology has for the current study and the ways in which its methodological approach can help the analysis of socio-space within a structurationist framework.

For instance, the changes in a town's physical form often reflects changing society or economic prosperity (Conzen, 1975). The town is a microcosm of society and, as such, is transformed 'according to its diverse needs, not once but continuously throughout the course of its history' (Conzen, 1981b, p.87). Whitehand (1999), in summarising the work of the urban morphologists, concludes that towns are shaped by the functions they perform (presumably within a wider economy), the form they adopt, and the connections they have with other towns: this is the tripod which Vance (1977) had introduced. The tripod gives implicit recognition to the influence of structures, and to a lesser extent agents, both in the wider economy and in the urban arena. This is

especially true if a town's function is to result from macro-level structural change; for instance, the onset of industrial capitalism.[15] The tripod can be applied to explain how processes, or mediators, work together (or interact within given structures) to shape cities. For example, connectivity with other centres brought industrial development to the arterial routes of Edinburgh's west end and to the railway in Perth. The functions of both Edinburgh and Perth switched to a more industrial focus than previously, affecting both social and physical space (Stavert, 1985; Massie, 1994). Both connectivity and function ultimately result in a new urban form (Whitehand, 1992).

Conzen (1981b, 1988) states that spatial change within the city is a result of societal requirements stemming from changing economic circumstances. He recognises the interactions apparent at different scales of analysis, identifying two morphological processes - a transformative process, in which repletion, replacement, and commercial redevelopment take place; and an additive process in which outward expansion, residential accretions and urban fringe belts occur. The idea of a fringe belt is one which has been adopted by many geographers to suggest an evolutionary process to town growth (Daunton, 1978; Carter & Wheatley 1979; Whitehand 1992). The attention paid to fringe-belts and fixation lines is one of the few recognitions of the linkages between micro-level influences and the meso-level form of urban settlements that are emphasised by urban morphologists.

Urban morphologists adopt a coherent approach to research. They demonstrate that structural changes in the economy lead to the changes in the built form of the city (Conzen, 1981b). Yet, there is more to urban spatial structure than the built form, as the urban morphologists accept (Whitehand, 1981b; 1992). Whitehand (1977) acknowledges the role of migration and natural population increase. Furthermore, he asserts that there are economic factors shaping the city and that the most important of

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[15] Although macro-structures and the resultant meso-level urban form may we the emphasis of research into the built form of cities, the micro-scale dynamics of change are usually overlooked. It is at this scale that structure and agency interaction has most relevance for urban socio-space as will become clear in chapters five and six. its omission therefore is somewhat limiting.

these is the housing market which, he believes, affects the level of land prices, house building and ultimately the supply of and demand for housing.

There has been considerable work on the built form of the city, especially of the nineteenth century city.[16] Yet research has tended to concentrated on the deterministic aspects of built form, rather than to consider the agency dynamics involved. These are not within the remit of the urban morphologist. Mobility, class, ethnicity and gender are therefore overlooked. Yet, this is to miss a vital element of the city and, thus, the research into the built form of the city is at best merological, at worst, incomplete. The urban morphologists are interested in the shape and internal physical structure of the city. However, it is important to move beyond built form; for built form cannot easily be isolated from other aspects of the city from the internal spatial dynamics of change.

2.3 THE URBAN DYNAMICS APPROACH TO SOCIO-SPACE

Although still essentially deterministic in its overall approach, research emphasising urban dynamics does at least recognise agency activity as a significant contributor to city structure and as such moves beyond the strictly built form emphasis of the urban morphologists. The urban dynamics approach to spatial studies was developed in the early years of the twentieth century by sociologists at the University of Chicago who began to take an interest in the spatial patterns of the city and the dynamics of change (Johnston, *et al,* 1995). The group became known as the Chicago School or urban ecologists.[17] One of the most prominent of the researchers was E.W. Burgess who developed the zonal theory of urban growth. This holds to the principle that city

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[16] In fact Whitehand, along with Conzen and Carter and Wheatley, has made such extensive studies of urban morphology in the nineteenth century, that there is little that has not been said already. The factors that are not explicit are scale and interactivity, while the factor omitted altogether as outwith the scope of their research is socio-space. Examples of the urban morphological approach to research in the industrial period include: Conzen (1958; 1960; 1968; 1981b, 1988): Carter and Wheatley (1979; 1982): Whitehand (1977; 1981a; 1981b; 1992).

[17] The term urban ecologist comes from the interest the researchers had in community structure and developmental history, seeing in this a parallel with the process of evolution found in the animal and plant worlds (see Timms, 1971). The roots of the Chicago ecologists can be traced back to Hurd (1903) who outlined a theory of urban growth which stressed the simultaneous operation of central and axial growth. This was a micro-economic approach which concentrated on the principles of land values within cities (see Muth, 1973).

growth operates on the basis of radial expansion from the city centre. It is most usefully illustrated in terms of the housing market which is regarded as the most important component of the city (Knox, 1990). This has particular relevance for this thesis where it is argued that agents demanding and supplying housing were operating within the capitalist housing market structure, and their interaction led to socio-spatial change as individuals acted upon their feelings and values and made decisions to move.

Burgess (1925) acknowledges the role of the housing market in shaping the city. However, he assumes that this is the result of all agents acting in a similar manner, that is, biotically. Yet, Burgess' theory also assumes a large and heterogeneous population, all of whom would have different migration experiences and backgrounds. These backgrounds are seemingly overlooked as the intra-urban migrants move into successive zones. Many of the assumptions of the theory, including impersonal competition and private ownership of property, are considered unrealistic (Knox, 1990). Perhaps a more relevant criticism that can be made for this thesis, is that Burgess takes little, if any, account of macro-scale structures, such as class or gender, other than capitalism implicit in the housing market operations. Further, no details are provided of the dynamics of change in small areas, and this is particularly surprising given that Burgess emphasises the ethnic and cultural mix of the population. Generally the role of the agent is underplayed as his theory is process driven (Short, 1996).

Given the emphasis on one scale and one structural influence, it would be difficult to apply Burgess' model directly to this thesis, but there are certain aspects of his work which can be of use. In particular the emphasis on the housing market operating as a mediator between capitalist expansionism and the creation of a residential mosaic provides a useful insight, even if the human input is somewhat lacking. Agency interaction within the housing market acts to create a dynamic force changing the socio-spatial structure of the town (D'Arcy and Keough, 1997). In order to gain an insight into socio-spatial change it is important to understand the operations of the

housing market as it is 'the most important mechanism in the social sifting of the city' (Short 1996, p.173) and is the largest single component of the town and the urban structure (Rodger, 1989). The aspect of the housing market which is most influential as a mediator of spatial change is a matter of debate. Institutional influences on housing are clearly important (Knox, 1990), but so too are economic forces. Some authors stress individual choice - people decide where to live. This choice is seen as either voluntary or dependent on financial or social constraints (Simmons, 1968; Pooley, 1982), but made within prevalent structures. In Burgess' theory, housing demand is seen in terms of a wider framework of invasion and succession (Timms, 1971) and, although Burgess identifies a level of 'economic behaviour' in his model, he argues that it is not as important as the biotic behaviour adopted by agents, and especially migrants.

Burgess' theory has been used and modified extensively by urban geographers (Dear and Flusty, 1991).[18] It provides a 'prototype' to which other spatial models can be compared: it also introduced the ideas of human ecology, which other researchers have taken up and either amended or expanded upon (see Alonso, 1964; Hauser and Schnore, 1965; Muth, 1973).[19] There have been numerous criticisms of the Burgess zonal model. Quinn (1940) doubts whether each zone would be as homogenous as implied, and whether humans behave would biotically is moot point (Timms, 1971), but perhaps this is more a criticism of unrealistic assumptions the theory makes about agents. Furthermore, it can be argued that the Burgess model is time and space specific (Chicago in the 1920s) and has a limited applicability to other cities at other times (Knox, 1990). This is reason enough to reject its methodology for the present study of late nineteenth century Edinburgh and Perth, although this does not mean rejecting all of its insights. Finally, postmodern critics also challenge Burgess's theory as too

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[18] Much urban research since the Second World War has been predicated on the precepts of the zonal hypothesis, sectoral theory and multiple nuclei model of urban structure. The most likely explanation for their endurance is in their relative simplicity and the enormous volume of literature produced by their adherents (Dear and Flusty, 1991 pp 52-53).

[19] Furthermore, Burgess' central tenet that city growth involves migration peripheryward (owing to the expansion of the central business district) has been validated by the work of Rex and Moore (1967).

absolute (see Dear and Flusty, 1991); a metatheory which ignores the importance of heterogeneity or difference - two attributes of any city.

Of all Burgess' critics the most prominent is Hoyt (1939). In disputing the zonal structure of the Burgess model, Hoyt identified, from empirical work using over thirty American cities, high rent sectors along arterial routes out of the city. Community leaders, best equipped financially, would choose the most favoured site for new house construction. This has important implications within structuration theory. Some community leaders can be thought of as 'urban gatekeepers'. They controlled access to land and thus the housing market, so used their position of dominance within the capitalist system to control what was built and who moved in to certain areas: it was a form of residential vetting and was apparent in Edinburgh in the late nineteenth century (see chapter five).

According to Hoyt, the most favoured sites were those furthest from the industrial sector - this holds in nineteenth century Edinburgh as well. The move to the favoured sites releases the former residences on to the market, and these, by the process of filtering, become occupied by the next income group and so on.[20] This has the effect of creating a series of sectors around the city. The main criticism of this model is the number of assumptions it makes, not least the complete absence of public, or co-operative housing; this no-doubt reflects Hoyt's vehement free-market philosophy (Short, 1996). However, in Edinburgh co-operative housing played a significant part in the socio-spatial structure, and as such cannot be overlooked. Nevertheless, Hoyt does pay more attention to agency than Burgess, but overlooks many societal structures and mediators other than capitalistic dominance and the housing market. Where, for instance, is recognition of residential attachment, migrant biography and social mobility? Furthermore, the use of 'economic man' by Hoyt, in that, the wealth and influence of agents determine their location within the sectors of the city, means the distinction between structure and agency is unclear. What precisely motivates or

[20] This was evident in Edinburgh after 1850: see the discussion of Cumberland Street in chapters four and five

constrains 'economic man'? Is it structures such as class, or his personal preferences. Hoyt, is largely silent on this. However, the dichotomous determinist / humanist approach in much of the urban dynamics work is nevertheless partly overcome by the use of 'economic man', albeit somewhat unintentionally.

Yet, in some ways, particularly with the attention paid to agency, Hoyt's model can be used in conjunction with Burgess'.[21] However, both fall short of providing a comprehensive analysis of socio-spatial change in two respects. First, their theories are 'grand theories' or metanarrative in form (Dear and Flusty, 1991). There is an absolutist element about their work, and certain variables (particular social variables) are overlooked or underplayed. Second, their scale of analysis is focused exclusively at the meso-level. Little attention is paid to micro-dynamics, nor is there any direct reference to macro-scale ideological factors which are influencing change, save capitalism. Both the Burgess and Hoyt theories hold similar assumptions, such as growing population and urban expansion - and this is the only link they make with the macro-scale dynamics of change. The extent to which either of the theories can be applied to nineteenth century Scotland is questionable. Both are products of their age (Knox, 1990) and, particularly with Hoyt, this age is connected with the car (Timms, 1971).

The work of Burgess and Hoyt has set in train further research and new theories and models of urban dynamics. This subsequent work recognises that micro-agency is more complex than simply invasion and succession. Two of the most influential works to be derived from the earlier works of urban ecologists are Harris and Ullman's (1945; 1959) multiple nuclei theory, and Vance's (1977) concept of the quasi-autonomous urban realm.[22] Both of these later works have attempted to incorporate

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[21] See Lawton and Pooley (1976), Carter and Lewis (1983, 1990) and Dennis (1990).

[22] The Harris and Ullman model combines aspects of both the Burgess and Hoyt models, but their central argument is that the urban place has several commercial nodes, not just one. This was actually true in Edinburgh in the second half of the nineteenth century when two phenomena occurred. First, old settlements, for instance Corstorphine and later Leith, were subsumed into an ever expanding capital city: second, within the city distinct districts were emerging with their own identity, for instance Newington. In both cases separate nuclei emerged. See also Johnston *et al*, (1990) and Short (1996).

links between macro-structures and agency activity and address micro-dynamics more than previously. However, the approaches are still too mechanistic and process driven and consequently the influence of the agent is underplayed.

Burgess, Hoyt and later 'mechanistic' theories of urban expansion do recognise structure / agency interaction, but only to the extent that agents move in response to a population change, the operations of the housing market and institutional factors and, thus, they underplay societal structures such as class. Their primary concern is with the processes apparent in, or mechanics of, spatial change within the city. The interactions of structure and agency at the meso- and micro-level need to be explored in greater detail, and in the light of macro-scale structures prevalent in society. Furthermore, social factors are as important in urban spatial structure as economic ones. Thus, class consciousness must be considered an important component of change, along with the economic factors emphasised by Hoyt, and the migratory processes of the zonal model.

The contribution of Burgess and Hoyt to socio-spatial studies of urban change has been considerable, but since the time that both authors were writing, research has moved on and different research agenda have been drawn. For the present study, analysis of the socio-spatial pattern of Edinburgh and Perth is made with reference to zones and sectors, but the variables and scale of change look beyond ecological and neo-classical economic explanations.

2.4 SOCIAL STUDIES OF SPATIAL CHANGE

The largely deterministic approaches of built form and urban dynamics is contrasted with the more humanistic approaches of the social studies of spatial change. In this work, the emphasis of analysis focuses more on human agency and the decision making of agents. The role of structures is not ignored. Indeed, it is recognised that structures act to constrain the activity of agents. However, most of the literature cited

below is characterised by the central and active role of agents which, in turn, shapes the city.

Urban economics, the physical form and the history of the city play an important role in affecting the spatial form of the city. They are not the only factors however. Many researchers have focused on social aspects of change using class, social status, occupation and housing tenure as variables of socio-spatial change. The general research epistemology is concerned with processes and patterns of spatial change. A meso / micro inter-relationship is usually apparent. However, previous research has tended to focus upon one aspect of change, or used one scale of analysis, or simply overplayed the role of the agent in spatial change. Thus, Cowlard (1979) Cannadine (1977) and Ward (1975; 1980) focus on class and social areas; Pooley (1982) considers mobility as the important process in residential differentiation; Gordon (1979) addresses status areas within Edinburgh; and Gray (1973) is concerned with styles of life of individuals or groups. By focusing too narrowly on one or two aspects of social morphological change, researchers can overlook other important elements of change. In this thesis, the use of insights from structuration theory will assist analyses of socio-spatial change using a number of different but inter-related variables. Thus, three structures are identified within which agents interact, and their interaction is checked by mediators. In the review of literature which follows in this section, the approaches which use class and / or social status as the main structures within which agents act are examined. The more humanistic approach will be apparent.

The 'social' turn in spatial studies began in the 1950s with social area analysis and the work of Shevky and Bell (1955).[23] Since then different techniques and methods of

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[23] The social area theory assumes that 'increasing societal scale is reflected in three sets of trends: the distribution of skills, the nature of productivity and the composition and distribution of population' (Timms, 1971, p.127). The technique uses census tract data, and variables are selected to represent the three constructs of social rank, urbanisation and segregation. These are combined to create 'residential area categories'. The technique has several critics not least Timms (1971) who doubts the link between a changing modern society and residential differentiation. Hawley and Duncan (1957, p.340) search 'in vain...for a statement explaining why residential areas should differ one from the other or to be internally homogenous'. They conclude that social area analysis 'boasts no theory that cogently relates hypotheses about areal structure to propositions about social differentiation' (*idem*). Perhaps this is why social area analysis was replaced by 'a more sophisticated inductive procedure' - factorial ecology

analysis have developed (Robinson, 1998). Authors have examined urban space using a wide range of variables and mapping techniques, which has inevitably meant a considerable variety of spatial patterns (Lawton and Pooley, 1988; Morrill, 1990); but choice of variables is also just as significant. For instance, Gordon (1979) is careful to point out that his study is of status groups as the main source used to categorise individuals is the rateable value of the house lived in. House valuation is a determinant of one's *status*. Those in a better paid job could afford to live in higher valued property. Cowlard (1979), on the other hand, uses details from the enumerators' reports in his division of Wakefield into eighteen 'social (class) areas'. He considers that social stratification should reflect, as near as possible, that perceived by contemporaries: this is not always easy to ascertain, in which case, occupation is seen as the next best determinant.[24] He concludes that the skilled working class areas are the most socially mixed. This is confirmed for Edinburgh and Perth later in this thesis.

The importance of Cowlard's work for this thesis lies in his (re)construction of the social class hierarchy as it suggests a 'placing' of the population. Cowlard's emphasis on class differs from the Marxist approach of, say, Harris (1984) and Harvey (1985, 1994) who view class as intrinsically bound to the capitalist method of production - the workplace divisions extending to the home. Harris believes classes to differ in terms of residential distribution, while at the same time conceding that residential areas differ in terms of their class composition. Together, class segregation and residential differentiation comprise the residential segregation of classes within the city. Harris argues that this segregation is extremely scale dependent which means that when one is considering two towns of different size, such as Edinburgh and Perth for instance, different scales of segregation should be apparent.[25] Moreover, if one were to consider

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(Johnston, 1980), although numerous examples exist of its usage in British studies (Herbert, 1960, 1976).

[24] Cowlard does not use occupation in isolation: six criteria are introduced to create a social stratification: in effect he layers each of his defined classes, 1-5, into status strata, *a-c*. These criteria include the keeping of lodgers and employing a domestic servant. Cowlard, with the use of maps, shows a pattern of segregation based on most to least desirous area to live in: areas of *1a* are the most exclusive and *4c* are "thoroughly disreputable with slaughterhouses and dungheaps" (Cowlard, 1979 p.245). This is taken from a contemporary writer M.H. Peacock (1828): A History of Wakefield Greencoat School.

[25] This is a Wirthian idea. Wirth (1938) accepted the hypothesis that population size is a dominant factor in urban segregation - it has not been rigorously tested (Morgan, 1975). The rationale behind this is

smaller areas within each city, the extent of segregation should also differ. This is reason enough to pay particular attention to the size of the case study town, and why, in the case of Perth, the enumeration districts might be considered too large an area to provide meaningful results, compared with Edinburgh. This could be resolved with recourse to street-level analysis.

Cowlard and Harris can be brought together in one important respect - organisation. Again attention needs to be paid to scale, but Harris is clear that class will organise itself spatially and politically through relationships and struggles. Organisation will happen because people are subjective; on this basis they behave. Here Cowlard's approach to the genesis of segregation is similar to that of Harris. Class formation is, thus, the process by which people begin to be aware of a common interest. When this is apparent, similarly minded people act collectively as a social (or political) entity (Harris, 1984). This entity asserts a behavioural process to establish the same class distinctions at home as in the workplace, and acts to create socially distinct and class specific areas (Harvey 1975). This highlights an important conceptual point of this thesis, namely that an agent's action is influenced by his or her perceived placed within the class structure. Because of one's 'sense of place' within this structure, an agent has a particular view of where he or she should be located residentially as well as socio-economically. Thus, there is a social and spatial overlap: indeed the two can be thought to be inseparable.[26]

The extent to which socially specific areas existed in Leeds in the nineteenth century is a line of research undertaken by Ward (1980). Similar studies exist for Liverpool

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straightforward: size influences segregation as a result of changes in the nature of personal relationships that are induced as population size increases. Thus, an increase in the number of residents in an urban community is paralleled by an increase in the scope and variety of types of people residing therein (that is, from wider backgrounds, races and creeds). Population increase limits the possibility of personal relationships. Segregation becomes the inevitable consequence of the breakdown in such personal relationships, especially when exacerbated by ignorance and prejudice. Schnore (1965) believed Wirth to be wrong, and suggested an ecological complex model as the basis for increased segregation as cities grow. This is a fourfold concatenation beginning with local topography influencing transport and communication networks which in turn will shape and mould the size, rate and growth of the racial mix of the population, which ultimately is the organising mechanism of the metropolitan area. The illustrates the complexity of urban dynamics of change and the many factors involved in change.

[26] See Pred (1984, 1986).

(Pooley, 1982) and Wakefield (Cowlard, 1979). Whereas both Pooley and Cowlard assert that social areas existed and social status and class were spatially differentiated, Ward disagrees. He claims that, in Leeds, there was social mixing and that social areas were hard to discern. The difference lies in Ward's scale of analysis and conceptual understanding of the term social status. Ward suggests that the working class and middle class were not well defined. Gray (1973) would agree, up to a point, and Young and Willmott (1957) confirm a growing distinction of social differences within the working class.

Ward accepts that Sjoberg's (1960) dichotomous pre-industrial model held for Leeds, but during the second quarter of the nineteenth century it became apparent that the growth of industry, far from creating polarised residential patterns, actually disrupted one. 'Judgements about the degree of residential differentiation are dependent upon the defining parameters of the classification of households into social groups' (Ward, 1980, p. 142).[27] The conclusion he reaches is significant. To the limited extent that Leeds had developed a dichotomous residential pattern, the socio-spatial differentiation was based on a distinction between upper middle class and the remaining groups both lower middle and all working class groups. The finding further shows that middle class households were present throughout all the areas of the city and this dispersion increased over time. Furthermore, fewer than 10% of EDs housed exclusively working class households. Ward believes that the high level of diversity in social and occupational strata suggests that there was little, if any, social distinction between the lower middle class and the higher strata of the working class. The conclusion drawn is that mid-century Leeds was characterised by socio-spatial heterogeneity. However, although Ward asserts that there was considerable intermixing, he does not allude to the proportions involved within the specific social

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[27] Ward divides households into two occupational groups: working class and middle class / self-employed. He then groups these at smaller scales. The working class is divided into three skill levels and the middle class divided into upper and lower. Large neighbourhoods are constructed aggregating census EDs. This point raises the question of whether the choice of scale of analysis was the primary reason that Ward's conclusions differed from Pooley who used unaggregated EDs. This point is revisited in chapter four, when the size of areal units are discussed with reference to indices of segregation.

areas. There may have been middle class representation in all the districts but this might have been one percent in some of them.[28] This would not suggest any substantial level of intermixing: but Ward stresses only one dimension of differentiation. Nevertheless, it is important to realise that Ward's study was for *mid*-century Leeds. It could be that the difference in his conclusion from other studies is explained by his examination of an earlier period. Differentiation arguably increased by the late nineteenth century: this was certainly the case in Edinburgh and Perth.

But the difference between the conclusions of Ward and Pooley does highlight an important aspect of socio-spatial study; namely, that attention must be paid to questions of scale, choice of variables, the study period and one's definition of key terms such as class and social status. Leeds and Liverpool were both large industrial Victorian cities which could be expected to have exhibited similar socio-spatial patterns. Yet, the former is seemingly socially heterogeneous, while the latter rather less so. Consequently, chapter three in this thesis justifies the scales of analysis and choice and definition of variables, as these are important factors influencing conclusions drawn.

Residential clusterings of social, occupational and migrant groups can be considered social areas (Ward, 1976; Pooley, 1982) and are influenced by a number of factors including disposable income, life-cycle stage, availability of employment, and access to services (Rossi, 1955; Simmons, 1968; Brown and Moore, 1970). The argument is that groups which cluster to form social areas do so in response to certain conditions and circumstances - the culmination, in effect, of 'residential decision-making set within a series of choices and constraints' (Pooley, 1982; p.206). The choices and

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[28] Ward (1980.) believes that social classes in nineteenth century Leeds were well mixed. This view is contested by Johnson and Pooley (1982) and Cannadine (1982) who claim that class groups were segregated during this period. Jackson, (1981) identifies the conflict as one of definitions and Cannadine uses professionals and non-manual groups when categorising class. Ward's examples are drawn from an industrialising town where 'the need to reinforce social distance by spatial separation may not have been greatly felt by the middle classes' [compared with non industrialising towns] (Jackson, 1981 *p.* 414). Jackson is confident that the stipulations of minimum house rateable values would have encouraged residential segregation based on socio-economic status among the working class. This would have been less obvious in Leeds where building societies provided housing for both artisans and non-manual workers, and did so in different areas. This was also the case in Leicester (Pritchard 1976).

constraints of agents are affected by structures within society, the individual's sense of place and biography, and, to some extent, the characteristics of the city itself. From this last assertion it is argued that the nature of the city is a factor in determining residential pattern (Jackson, 1981; Johnson and Pooley, 1982a) - a point made by the urban morphologists. Perhaps this is due to the city's position within an urban network or hierarchy - a matter raised in chapter four. More fundamental than this, it is not the nature of the town *per se* which determines the location of agents but the individual decisions agents take influenced by that nature or structure. This demonstrates the recursive structuration process at work. Furthermore, Pooley (1982, p.207) concludes that 'individual decisions on residential location were the basic process of causing distinct social areas to develop and retain their character over time...we must ask: what determined these decisions'? It is the attempt to answer this question which lies at the heart of much of the research in this thesis. Some have already posited answers. Pooley suggests it is the pre-existing structure, government or local authority bye-laws, or the aggregate social, economic and demographic regimes of the prevailing society (Pooley, 1982). These no doubt did exert much influence, but this thesis goes further in arguing that there were factors outwith the town unit which affected socio-spatial change - ideological factors associated with class and capitalism. Within these structures the shape of the town would change, and this in turn would affect residential decision making. But such decisions were made within existing social structures and were also influenced by the 'structured feeling' (Pred, 1984).

Although a highly interesting area of research, ascertaining how decisions are made is difficult at the individual level. Thus, "collective decision-making" in the form of (residential) areal change must be used to answer the question. One manifestation of such areal change was in the growth of suburbs. Suburbanisation is the result of changing social relationships[29] and the rise in better transport communications (Thrift, 1990). From the 1850s railways allowed a greater degree of mobility (Simmons,

[29] The growth in differentiation between social classes led to polarisation: one way this was manifested was in the growth of suburbs where those with the ability to live away from their place of work exercised this choice. In most cases in the late nineteenth century this was the higher social groups (Johnson, 1974; Thomas 1974).

1991): suburbs became widespread as individual workers chose not to live near their place of work in the centre of town, but rather moved to the outskirts (Johnston, 1980). This was the case in Edinburgh (Massie, 1994).

Harvey (1985) views suburbanisation as the result of capital over-accumulation in the production 'circuit' - the so called primary circuit. Accordingly, it initiates a switch to the secondary 'circuit' of the built environment, providing the means of change behind the process of suburbanisation (Carpenter & Lees, 1995). Cannadine (1977), on the other hand, views the suburb as the embodiment by the middle classes of a housing need, through aristocratic preferences - which is surely a reflection of one's choice and structured feeling (see Pred, 1990). This was made possible by the processes that led to social segregation, with the lower status groups outpriced in the urban fringes. Yet for Harvey (1989, p.122) the suburb is formed as an 'economic and social response to problems internal to capitalist accumulation'. It becomes a barrier to further social and economic change, as it is a fortress for a specific social group that has made a choice to be separate from others. Mumford (1961) refers to this as a collective attempt to lead a private life. Individuals choose an area to live in because its existing residents have attitudes consonant with their own and, furthermore, would be the type of people with whom they would want to have contact (Johnston, 1980). Thus, privacy could be eroded rather than enhanced. Socially similar residential areas, whether in suburbs or not, are the likely outcome of this.[30]

The residential area of a city is an intrinsic part of the city as other status symbols are not (Beshers, 1962). One's address places one within the context of a particular urban social structure. This was true of Victorian society (Newsome, 1997), but the significance of (urban) social structure was in its derivation. The spatial structure of Victorian cities partly reflects and partly determines the social structure, which itself is a product of the changing nature of nineteenth century towns, especially their

[30] The spatial structure of the nineteenth century town is the result of the development processes of change in the economy and society attributable to the interaction of structures and agents. Underpinning this however are the relationships between the social groups that were co-habitors of the same urban place (Pred, 1984; Dennis, 2000).

composition.[31] How much spatial change was apparent, especially after 1850, when the 'grand economic transition' had taken place? According to Marxian theorists, and their critics, including Durkheim (1933), Weber (1958) and Pareto (1972), all changes at the spatial level in this period must, perforce, be seen in socio-spatial terms (Giddens, 1971, 1984). Indeed, it is along these lines that research on Edinburgh and Perth is to be undertaken. It is necessary to view nineteenth century towns in strict socio-spatial terms because social structure was, essentially, inseparable from spatial form (Giddens, 1985). Pahl (1970) expresses this in terms of dynamics, believing there to be a whole system of finely balanced patterns of dialectics between the social and the spatial and between the allocative and accessibility structures.[32] This point can be well illustrated with reference to the operations of the urban gatekeepers in late nineteenth century Edinburgh as they used their dominant position within the capitalist housing market to constrain where certain social groups were to be located, thereby influencing socio-space (see chapter five).

According to Marxist writers, residential differentiation must also be seen in terms of differential access to municipal and institutional facilities, such as education and recreation. Moreover, Harvey (1975) believes that social segregation reduces the amount of social mobility that is possible, thereby keeping the working classes in their place.[33] The middle class become the dominant class of the city, although not numerically, simply by controlling the mechanisms of city growth and spatial change, such as the housing market, employment location, and ultimately residential location. Dennis (1980) sees residential segregation as reinforcing the social isolation of rich and poor, which presumably can refer to the middle and working classes. In his novel

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[31] This has been identified as the 'socio-spatial dialectic' by Soja (1989).

[32] For example, the development of the middle class in the nineteenth century drove society to abandon its agricultural condition in order to pursue the new, yet unfamiliar, goals of industrial urban development. The middle class provided the necessary agency of change, challenging the existing structures. Social re-stratification therefore accompanied urbanisation and created a geographical palimpsest - the city became responsive to social demands (of the middle class), and is thus, a social consequence (Reissman, 1964 see also Cannadine, 1998).

[33] This reinforces the link between power and place in the structuration grid, figure one in chapter one. Power, within the capitalist structure, not only kept the working class in their place, but gave them a sense of place both socially and spatially, as the urban gatekeepers ushered them to their appointed quarters.

Sybil, Disraeli lamented this fact opining that, by living separated from the lower classes, the middle classes were abandoning their responsibility for morality and order. In such abandon they were, however, exercising their choices in a free society. Increasingly such choices (made within and constrained by structures) led to social separation and residential segregation. This in turn would affect future choices as it strengthened social division and heightened an agent's sense of place, both socially and spatially. This demonstrates the recursive nature or duality of structures and their effect on agent's action (see Giddens, 1985).

It is the 'place' or locational aspect of much of the work cited in this section which has most relevance for this thesis. The work has moved from grand theories to stress more the role of the individual and the impact individual decisions made. These decisions were made and constrained within underlying structures and included the sense of place and identity an individual felt. It is on this sense of place that attention must now focus. Much recent research in geography has taken what has become known as a 'cultural turn' (McDowell, 1994): this is also true within the area of historical geography (Nash and Graham, 2000). This turn has directed attention to such areas as individual identities (Graham, 2000), gender (Domosh, 1991), imagined places (McDowell, 1997), and most import for this thesis, senses of place (Duncan and Ley, 1993). Because 'place' is such an important consideration in an agent's decision making processes, whether consciously or otherwise (Pred, 1986), it undoubtedly played an important role in the socio-spatial processes within late nineteenth century cities (Dennis, 2000). How authors have dealt with the sense of place will now be explored.

2.5 AGENCY AND PLACE

It must be stated from the outset that much of the recent work on 'place' is not directly concerned with socio-spatial analysis, but forms part of the growing literature within cultural geography (see Crang, 1998). As such, only selected work that has relevance

to this thesis is discussed below with particular attention given to the conceptual framework developed. Place based research on socio-space is the most humanistic of all the approaches considered. The emphasis is on agency activity, and within this, areas of study have included personal identification, sense of belonging, gendering the city and agent biography. The implication of this work is that the individual is subjectively responsibly for the identification of place and ultimately socio-space. This is not to suggest that structures are overlooked. Indeed, they are fully recognised as contributing to a sense of identity or place and as constraining the activities of agents. However, the structures in society are not viewed as determining an individuals sense of place, simply as a factor contributing to it.

The bias towards agency in the place based literature is perhaps a reaction to much of the earlier work which was deterministic is approach. Moreover, the place literature, which forms part of geography's cultural turn is the natural successor to the social studies of place and space in the late 1970s and 1980s. The place based work, in attempting to correct conceptual biases whether intentionally or not, is not without limitation. Much of the work does overplay the importance of the role of the agent in socio-space. Nevertheless, the contribution the work makes to socio-spatial studies provides valuable insights into the behaviour of individuals and their effects on city space.

The definition of place to be used in this thesis was outlined in chapter one when it was considered as part of the structuration grid. Place was seen to provide a conceptual link between class and capitalism, between mobility and the housing market and between social interaction and power relations. This link forms a structure within society, that of legitimation (Giddens, 1984; see also Gregory, 1986). Place (whether social or socio-spatial) gives legitimation to one's class position, one's residential location and one's social interaction: class and capitalism are legitimised *in places* (Cloke et al, 1991).

For the 'new humanistic geographers', place is never merely an object; it is always an object for a subject (see Pred, 1983). Place is the loci of meaning, intention, and values; a focus of emotional attachment. Firey (1945) recognised this over fifty years ago. Indeed, it has been argued by Relph (1976) that it is such 'human emotions' which transform space and physical features into places. Tuan (1977) develops this concept further. He states that it is through images, ideas and symbols, through the 'actual experience of meaningful events', that place is created.[34] This conceptualisation is subjective, relying, as it does, upon the perception of the individual agent. Surely, the same place will have a different 'meaning' to two different individuals. Such difference will be due to individual circumstance, values and life-course stage: what can be called one's biography (Massey, 1995).

Place in this thesis is considered as both social (positional within a social hierarchy) *and* spatial (place as a location). It is argued that the two became inseparable by the end of the nineteenth century. One's social position was also one's spatial location. Previously one's place of residence was not synonymous with one's social status, but had more to do with everyday practicalities and occupation. With the onset of industrial capitalism the workplace and the home were separated. Furthermore, capitalism brought with it a new hierarchy, as one's place in the capitalist production process would ultimately position one socially. Gradually, this was extended to determine one's position spatially as well. Thus, by the end of the nineteenth century in many towns socio-spatial polarisation was a common, if not ubiquitous feature. However, this cannot be entirely due to industrial capitalism as research in this thesis will show, but through the interaction of structures and agents, the later being influenced in his or her decision-making by the underlying structures.

Pred (1983) argues that an agent, in making residential decisions, will do so based on his or her 'structured feelings'. This acknowledges the impact of social and historical contexts on individual experience. Structured feeling is being situated in a particular

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[34] Cited in Pred (1983, p. 49; see also Tuan, 1974, 1976).

generation, class, time, community, gender. Pred (1983, 1990) argues that an individual acquires a structure of feeling by having his or her path exposed to news of politico-historical events, partly as the result of everyday intersection of that path with other persons (whether directly or indirectly) and objects and partly as the results of constraints imposed upon him or her. Yet, the becoming of structure of feeling is a by-product of individual and collective participation in the ceaseless time-space flow of the structuration process in historically specific situations. This is where Pred's idea is significant for the present work.[35] Structured feeling is the mediator between the action agents make based upon their perceived position within the class and capitalist structures. As such it provides a conceptual link between the process of mobility and the operations of the housing market. Indeed, house builders and speculators often played on the ideals and values of individuals in enticing them to move (see chapter five). Place therefore is a highly significant component of the present thesis.[36] But how have other researchers dealt with the concept, both within and outwith a place specific context and what insights for the present study can be identified?

There are three related ways in which recent writing on place can assist the present study. First, some authors stress aspects of place which are not confined to residential location.[37] This genre is not new and includes the seminal Orientalism written by Said (1978). The importance of work stressing perceptions, imposition of ideals, gender, class and power relations is that it allows place to be removed from the socio-spatial sphere, which adds credence to the discussion in chapter one where it was argued that

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[35] Pred's notion of structured feeling is based on the work of Raymond Williams (1977). However Williams is not place specific in his theory. Conceptually, structure of feeling is at least implicitly bound to local, regional and national culture, yet, Williams confines himself to structure of feeling at the national level. Pred's work has focused attention at the local level, while fully recognising the macro-scale features of structured feeling, such as nationalism, and class (Pred, 1983 pp 55-58).

[36] This can be illustrated further. Pred (1983) suggests all buildings, roads and the physical landscape of the city together construct, maintain and sculpt place by taking place, and are the consequences of specific goals and intentions (in fact, agency interactions) and that such intentions are based upon ideology, say, capitalism. Ideology at any level is the product of living in (socially constructed) places based on ideology. This is a circular argument, but serves to show how ideological structures are recursive in character. This addresses succinctly the macro-meso-micro relationship. Social interaction at the micro-scale is conditioned by macro-scale structures. This interaction between macro-structures and micro-scale social interaction finds spatial expression in the city (meso-scale). This thesis will show that as interaction changes, socio-space changes. The process of change is thus scale sensitive and incorporates more than one structure prevalent within society at a specific time, or over a period of time.

[37] For example, see Massey (1991), Smith (1993), Duncan and Ley (1993), Rose (1995), Hall (1995), McDowell (1997) and Graham (2000).

place, within a nineteenth century context, must be seen as both socially positional and spatial. But this point immediately raises the central criticism of much of the 'identity' place literature with the notably exception of Said (1978), namely, that historical and locational specificity is missing. Thus, Rose (1995) speaks of a sense of place in terms of a relationship to power, but this sort of place can transcend place. This means that the place of which Rose writes is entirely based on how individuals fit themselves (and others) into a hierarchy of power. Interestingly of course, by thus defining themselves within this power hierarchy, they both use and maintain the power structure and maintain their place within it. What is missing from Rose's narrative is specificity - locational and historic. This is true for much of the 'perceived place' literature. In this thesis, this omission is rectified. Power relations, for example, can be applied to the late nineteenth century urban gatekeepers within Edinburgh. The action of gatekeepers, (or interaction with those who sought housing through such devices as advertising), generated socially specific areas and gave socio-spatial manifestation to the sense of place agents felt within the underlying structure of power (see chapters four and five).[38]

The second source of insight for this thesis in recent place literature lies in the work of those writers who stress place as 'imagination'. Most of this work has been at the conceptual level and has been rooted in postmodernism, but not all (Robinson, 1998). The relevance of imagination for a socio-spatial study lies in the fact that imagination implies what someone wants to see, or is being coerced into seeing. These are closely related. The latter of course links back to Rose (1995) and the notions of a power relationship. These two 'sights' need brief examination and can be extrapolated into a nineteenth century context.

The agent wanting to see something is imaging a landscape perhaps that is not there. In this sense, the landscape or place is invented and this may be done for a variety of

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[38] Recent attention has also focused on place in terms of gender, race and sexuality. For example, see Hooks (1991); Hesse (1993); Rose (1993, 1995); Smith (1993); Valantine (1993); Kobayashi and Peake (1994); McDowell and Sharp (1997); Beddoe (1998); McDowell (1999).

reasons. To use some literary and artistic examples, consider the patriotic poem, Jerusalem. Blake contrasts the 'satanic' mills with the 'green and pleasant land'. Even if one allows for poetic license, there was little evidence to suggest that the mills, the workshops of the industrial masses, were satanic. The green and pleasant land is also misleading - there was much exploitation in the countryside, widespread poverty and, especially in Scotland, clearances to make way for the expansion of capitalistic agricultural practices. Perhaps this was not so pleasant for the rustic inhabitants of 'our green' land. Similarly, Rose (1995) uses the Gainsborough portrait of Mr and Mrs Andrews to exemplify the notion of a constructed landscape. The landscape depicted in the background of the painting is an Arcadian idyll celebrating not the working of the land by the erstwhile peasantry, but the ownership thereof. This dramatically distorted the actuality of late eighteenth life. Landseer painting in the nineteenth century used similar devices, but could also draw upon colonial expansion to extend allegory to the limits of imagination.

These examples highlight the attitude of the middle classes in late nineteenth century. They too would construct images of the townscape, sanitising themselves of the squalor and decay of the inner city, and instead constructing images of what they desire to see. Improvement companies, housing co-operatives and builder-speculators all used hyperbolic descriptions of Edinburgh to make it as attractive as possible (Elliott and McCrone, 1980). Articles that subsequently appeared in Edinburgh journals would thus perpetuate the constructed social landscape of the city and leave the middle classes in an arrogative ignorance.[39] This was highlighted by the Royal Commission into Working Class Housing (1885) where the evidence given by some of the city 'worthies' is astounding in its ignorance of how the poorest were living. The middle classes felt they ought to see respectability within the city, and the improvements many of them tried to make were in this vein.[40]

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[39] See chapter five and also, Rodger (1979; 1986), Gauldie (1979), Elliott and McCrone (1980).

[40] The Free Church minister, Dr Begg wrote in 1866 of the happy homes working men ought to live in. More than this, he explained how they can do this. Apart from promoting his model dwellings in the Colonies and other districts of Edinburgh, the reverend gentlemen expounded, at length, the morals, ideals and behaviours that went with such respectable accommodation. Whilst doing so he 'imagined' non-respectable places as 'shadows' delineating the margins of domestic propriety and city civility

Linked to how some inhabitants wanted to view the city is a coerced view of the city. The working classes in the above example were coerced into living in a respectable city by adopted middle class values. In some cases, particularly amongst the so-called labour aristocracy, this was readily accepted. The coercion is linked again to the power structures within society. Those in an empowered position had the means and the ability to construct the 'places' within the city. This not only meant individuals were kept in their place within the hierarchy, but that this was extended to spatial allocation as well. From the examples above, it seems people are constructing places both socially and socio-spatially. This is a conclusion reached by Rose (1995) and Jess and Massey (1995), who add that the circumstances in which places are made by individuals are not always of their own choosing. The view the authors reach is that power relations construct socio-space. This conforms to the coerced view of place, and prompts the question, can place ever be 'real'?

Put another way this question asks, are all places imagined? Yes, to the extent that places are what human agents feel, see and experience. But, no, if the implication is that places do not exist. Places are there, but they are largely invented and become intrinsically associated with particular attributes, values, events and feelings. Shields (1991) calls this 'spatialisation': invented place. There is a nuance, however, in the term 'invented'. Etymologically, to invent means to discover: perhaps the discovery of place is a better term. Invention implies a single act by an individual or institution to create a place. Individuals, however, will discover that place and not invent it. Yet in discovering a place they reconstruct it. Thus, they can imagine the city as anything, whether through their own imagination or that imposed. An example might be to imagine Edinburgh New Town as a spatial expression of the Enlightenment. In this instance, however, the imagined city is not a dreamscape but a metonymy - the

attributes of the Enlightenment are expressed spatially in the grandeur of Charlotte Square. This line of enquiry has been followed in some of the postmodern literature.[41]

There is a thin line between imagined or metonymic cities and socially constructed places (McDowell, 1997), and this point highlights the relevance of much of the imagined place literature for the current thesis. The extent to which the city is created as a concretisation of oneiric structures, or simply as socially constructed loci of interactions is open to debate. Fantasy can exist in cities - the city as socio-spatial harmony, compartmentalised into its constituent groups, is such as example (Daniels and Rycroft, 1993). But the question must be, is this harmony a result of totalitarian image making (by empowered gatekeepers) or the outcome of the interactive social relations based upon choices and constraints made within underlying social structures (Howells, 1997)? In many ways the answer to this question is a central concern of this thesis. Put another way, it can be asked: was socio-spatial polarisation an imagined place, or the result of agency interaction within societal structures? There are elements of both in late nineteenth century Edinburgh and Perth. Of course social interaction and the empowered position of urban gatekeepers were manipulating socio-space and creating socially exclusive areas. However, the beatified notions of suburbia, the demonised notions of the Old Town and the idealised notions of model dwellings, do lie in the realms of a dreamworld. Thus, in analysis of the socio-space of nineteenth century Edinburgh and Perth, researchers ought to draw on the work of imagined places as it emphasises the elements of social construction, image and landscape making, and positionality. This prompts the question - for whom is the city a dream? (see Mazzoleni, 1991).

This leads to the third and arguable the most important aspect of place for the present thesis, that of personal identity. In the discussion above an important element was lacking, namely that of personal feeling. To some, for instance, the city may not feel

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(Begg, 1866). As a result areas became entrenched in middle class discourse as slums. This is just one example of how middle class 'paternalists' would often impose their own sets of values on others.

41 See in particular Soja (1989) and his work on lifespaces and Los Angeles as Disneyworld. Also Garreau (1991), Doel (1992), Sorkin (1992); Ellin(1996) Dear and Flusty (1998)

like a dream, but a nightmare, particularly if one is socially excluded, very poor, homeless or a member of a persecuted minority. The idealised middle class construct of an improved Old Town would mean nothing to a slum dweller in Canongate. In this part of Edinburgh the professional employees from the Grange would be the outsiders. Why? Because, they could not relate to Canongate as their 'place'. It was outside their realm. They were 'out of place' there (Massey, 1995). This is place as personal identity within a locale; place as a social domain, which was to be increasingly 'place' as a socio-spatial residential location.

The notions of belonging and personal identity are closely connected to three factors: class or position in society, difference to others and individual biography or history. Each of these is connected to what Pred (1984) has called 'structured feeling' - the central element of the structuration grid in chapter one, and as such a significant mediating influence on agent behaviour within societal structures and on the resultant changes to socio-space. Conveniently most of the literature concerned with personal perceptions of place is divided into the above three categories.

Thompson (1992) argues that an individual's sense of identity is shaped by four dimensions, the most important of which is class.[42] Class identity at the top of the hierarchy in the nineteenth century meant power (McClelland, 2000), whilst at the bottom, working class consciousness was in solidarity (Thompson, 1992). Whatever an individual's position, throughout the nineteenth century class identity became more pronounced (Newsome, 1997). This progressed naturally enough as a spatial expression of identity and hence the large scale polarisation of the social classes in Britain cities (O'Brien and Quinault, 1993). This class identification is an identification by individuals with who they are, what they do and their role in society. These factors became increasingly apparent with the onset of industrial capitalism. Sense of place in this context is therefore one's social position (Rose, 1995).

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[42] The others being nationalism, gender and generation (Thompson, 1992 p.180).

Haraway (1991) believes that class identity is forced upon individuals by capitalism, and it is affinity with others in the same position rather than an identity. It is a unity through domination. Hall (2000), believes that class identity owes as much to political struggle as to capitalism, though the two may be related. This can be illustrated by the middle class attitude to male suffrage. During the Reform Bill debates leading up to the passing of the Act in 1867, the qualities of working men were assessed. Only those thought 'respectable', it was argued, should be given the franchise. This forced into being many working class organisations determined to get the vote, whilst at the same time forging a sense of identity and diversity: identity amongst the respectable working class, and diversity from the mass of unskilled labourers. These subtle distinctions within classes, as well as between them, meant the socio-spatial expression of social difference became inevitable as individuals jostled for social position and respectability. Identity incorporates values, beliefs and aspiration (Graham, 2000). These, Graham argues, are used to construct simplifying structures of sameness that identify the self with like minded people. The consciousness of one's class certainly meant relating to like minded people (McClelland, 2000).

But class is a social construct (Joyce, 1991), it connotes relations of exclusion, of clearly demarcated boundaries and of differences to others within society. Class, Joyce (1991) argues, becomes part of the landscape. This further gives weight to the view that the social became the socio-spatial. Class as a structure is legitimised in places, and places legitimise class. Socio-spatial polarisation therefore re-inforces class distinctions and class identity. Class structure is reproduced by agents interacting within it. Class-based residential decisions simply underline class identity (Agnew and Duncan, 1989); and class identity was difference from others (Joyce, 1994).

The second notion of personal identity is that of belonging or not belonging. Put another way this is defining oneself in contrast to others, something Colley (1992) argues Britons have always done. This reinforces the positional aspect of place central to the argument of this thesis. By stressing to which group one belongs or does not

belong, one is placing oneself in the class structure, or within the capitalist production process. Groups emerge, identities are forged, and are then spatially expressed through choice of residence.

Mayne and Lawrence (1999) have recently stated that sense of place originated in the cultural self-identification of those who inhabit that space. This is somewhat ambiguous. Does it mean that individuals awaken to a self-realisation of whom they are based on who they are living with, or do individuals choose to move to a particular location because they can identify with the existing residents of that location? In fact both could be true. It is the classic dialectic; does location give identity, or do humans give identity to places (see Soja, 1989)? In the nineteenth century social place and socio-spatial place became inseparable, and maybe because of the socio-spatial dialectic. Today, social status and residential location do not coincide: society has once again become spatially heterogeneous, a result of globalisation, multi-culturalism and a gradual diminution of the importance of social status - class consciousness is no longer as dominant as it was (Massey, 1991).

Rose (1995) believes different groups (perhaps even classes) in a society may notice their difference from others and want to mark that difference. One way of doing this is to claim to belong to a particular place. This can be done voluntary through residential decision making or enforced through, say, building controls. Rose, recognises that power relations are important here, they are in the construction of Otherness - who belongs and who does not belong to a place. This inevitably gives individuals identity in two respects: identity of as part of a group, and identity as not being part of the Other. In the nineteenth century, to remain part of the group increasingly meant living with the group.

A considerable amount of recent work on place has concerned itself with notions of Otherness, the Self and a sense of belonging.[43] Its scope moves well beyond the link to

[43] For instance, see Westwood (1990); Putnam (1993); Sibley (1992); Carter *et al* (1993) Duncan and Ley (1993); Keith and Pile (1993); Smith (1993); McDowell (1997); Graham (2000).

socio-space and thus, attention to it here must be limited. However, there are a number of important insights which it does reveal about place identification. One important insight concerns social relations and the construction of Otherness (Massey, 1995). Places, Massey argues, can be articulated as movement of social networks; in other words, as interactions. Such interactions, this thesis argues, are carried out within structures which must mean that the construction of Otherness, from which places are eventually to be defined, is done within, say, the class structure. Of course, modern writing rightly stresses gender, ethnicity and sexuality as much as class, all of which are structures. The application of the latter three to the nineteenth century, though interesting, is beyond the direct scope of this thesis for the reason that socio-spatial patterns at this time were dominated by class. Nevertheless it must be recognised that the identification of individuals within a particular class is made using census based occupational data. This uses male occupations and male heads of household. The implications of this mean that the role of women in agency decision making and socio-spatial formation is underplayed. This is a topic which needs much further research and the present thesis hopes to establish an opening for future research in this area.[44]

Mayne and Lawrence (1999) argue that a sense of place is mediated through gender and ethnicity, but add lifestyle to this. This, though, is rather a vague term and all encompassing, as lifestyle can include everything from occupation to sexual preference. Jacobs (1996) is more precise in her call for a more mobile definition of place. This, she says, will unsettle the notion of a bounded pre-given essence of place to which the identity of those who dwell there adheres. Instead, a mobile approach attends to the constant interplay between positional and variable urban histories and the complex intermeshing of the global and the local - that is to the overlapping territories and intertwined histories which produce the unstable conditions of dwelling in place. Identity thus becomes understood as a positional construction framed within certain arrangement of power. This takes on meaning when the local is shown to adapt

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[44] See also the discussion in chapter five.

the persistence of power (consider coloniser / colonised). This point highlights the role of scale within understanding place and identity.

It is important to stress that an individual's identity and one's sense of place may occur at different scales (Rose, 1995). One may feel loyal as a Scot or a Briton and have a national identity. Thus, having a national identity is a focus of unity and can be extended to place. Examples exist in Edinburgh and all other large Scottish towns of Irish (and other national) communities confined to small areas within the city. Yet, it is likely that class would cut across this national identity (Withers, 1991). Middle class migrants to Edinburgh (and there were quite a few) would not wish to co-habit with their fellow expatriates of lower social order. But this highlights that nationalism and class are both national (or macro-scale in their influence). Regional, local and even supra-national senses of identity now exist (Giddens, 1979; Rose, 1995). But it is the argument of this thesis that the underlying macro-structures dominated individual senses of identity which in turn impacted on residential (and other) decision making, the growth in class awareness and ultimately socio-spatial change.

Rose (1995) is adamant that individual feelings of place are shaped by cultural, economic and social circumstances in which individuals find themselves, and have travelled through in the course of their life-history. This introduces the third aspect of place and identity, namely linking it to individual biography and history.

Withers (1991) takes issue with the notion of Otherness shaping the identity of individuals within the city. In extensive studies of Highland communities in Scottish cities, Withers has discovered that processes acting to shape the identity of Highlanders (and this can be extended to other groups) were more class and relationally based, rather than the result of Otherness of Highlanders from their hosts. However, this conclusion might be the result of a large degree of social homogeneity amongst Highland (and other) migrant groups - in other words, migrants may be from the same social class. Nevertheless, what Withers (1991) states is that migrants within

the city soon fit within the existing class and capitalist production structures. In most cases migrant communities were at the low end of the social hierarchy. Indeed, migrant identity was framed by their relative position in pre-given social relations of production. This, however, is to recognise that migrant communities accepted the structures and institutions dominant within the city and conformed thereto. Yet, they remained migrants. City-born residents saw them as in-comers and they were often stigmatised as such. It was the Highlanders and Irish in particular who found themselves in the worst quarters of Edinburgh in the later nineteenth century (Gordon, 1979).

Migrants did have shared experience. This gave them, along with their outsider and class labels, an additional identity. Migration also reveals one's values and attachments (Fielding, 1992). In structurationist terms these values, as well as residential decision making, must be seen in the light of the prevailing structures within society. This takes on significance when migration is considered a part of the everyday experiences of individuals within a structured society. People make migratory decisions constrained or conditioned by underlying structures such as class. Migration can then reveal something about social structure and the way it affects residential decision making and ultimately social morphology. Migration decisions become class based or status conscious - as one becomes socially mobile, one is inclined to live in a higher status area (see Fielding, 1989 and Halfacree and Boyle, 1993).

Halfacree and Boyle (1993) called for a biographical approach to migration analysis. This has been heeded by some (Pooley and Turnbull, 1998), but the qualitative data sources necessary for such analysis are often difficult to obtain, and thus the population geographer must rely, somewhat disproportionately, on quantitative sources. Biographical approaches, however, recognise that life-history plays a significant role in residential decisions. Earlier work by Pred (1983; 1984) also recognises that biography is important in how one feels about a place. This is obvious with regard to a migrant Highlander arriving in Glasgow who naturally feels out of

place. But even with sessile individuals within city, the course of one's life affects one's view of place and personal identity.

Place as a centre of meanings and feelings is a focus for sentiment, expression and individual significant. One place may hold greater significance than another, simply through different experiences (Pred, 1983). This is to understand place as contingent upon that experience: upon individual life history. One frequently feels sentimental attachment to a home town, for example. Place is thus 'sensed' with contact or experience (Relph, 1977). In this way, one can feel as though one belongs, or one is 'out of place' (Massey, 1995). The biographical approach to a sense of place is, thus, radically different from place set within a power relations context (Pred, 1983).[45]

Thus, place is based upon experience, and this must include social interaction and socialisation (Pred, 1986). This is provided by family, school, workplace and home, all of which are located within social and economic structures. Place, Pred believes, must be interpreted in terms of time-space specific everyday practices. In this way, biographical consciousness shapes sense of place for an individual. This makes place very subjective, but, argues Pred, this generates the structured feelings of individuals which determine their actions and values. Through the structured feeling, place is a continuously reproducing by-product of individual participation in the time-space flow of the structuration process. Individuals perceive their class, rank, or position, say, and in acting according to the feeling of their place within that class, they reproduce the structural properties or attributes of class. This took on spatial expression in terms of socio-spatial polarisation in nineteenth century Edinburgh.

Woodward (1995) argues that such socio-spatial polarisation is society widening the gap between specific groups in terms of their social and economic position.

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[45] However, subsequent writers would take issue with Pred's assertion. Massey (1995) highlights place dominated by social and economic conditions (structures). One may feel sentimentally attached to a place maybe because it is one's home, but if that home has been dominated by domestic violence, racism or exploitation, it is felt to be a place of abuse (see Rose, 1995). In this sense, place cannot be separated from experiences, whether good or bad.

Polarisation is then experienced and re-inforces the differences between the groups and maintains or reproduces the class structure. Polarisation, however, must be experienced differently by different groups. Not all groups will have chosen such polarisation. The poorer groups must accept it as an inevitable consequence of the action of others in society who are in a position to move away from them.

Woodward and others who write about biography and social identity tend to miss the recursive nature of class and agency action within structures. As such they miss important interpretations of the socio-spatial outcome which result. Walters (2000), for instance, is far too mechanical in his view that potential migrants assess place characteristics before they move. Not all migrants are able to do this. He misses the vital link with power relations and the structured feelings which Pred (1984) argues we all feel about a place. Undoubtedly some locations will have attractive features which will appeal to migrants. Indeed, speculators in nineteenth century Edinburgh used such factors to good effect (Elliott and McCrone, 1980). But the important point missed is why individuals perceive a location as having attractive attributes. What is it that makes a place attractive? Pred believes attributes of a place are due to structured feeling, which is the position an agent is in having gained experience of a lifetime of interacting with others within social structures. The lawyer may find great attribute in a green suburb; the factory worker may feel it is too far from family and work, and so not as appealing. This highlights different life-styles and priorities: the lawyer favouring good surroundings and respectability, the factory worker a closeness to his work, perhaps due to economic circumstance. But is this example simple a notorious archetype?

Research indicates not. Pooley (1977) has discovered that working class Liverpool workers lived close to their work and Busteed and Hodgson (1994) argue that the Irish in Manchester found solace living close to each other. Gray (1979) shows that residential proximity of labour aristocracy in parts of Edinburgh expressed both solidarity and reinforced their identity as a separate category of worker. The point is

that different groups have different opportunities for where they can live owing to their circumstances. With unconstrained choice all groups would want smart, spacious accommodation. But constrained by societal structures and economic circumstance, they base their decisions and residential behaviour on their structured feelings and abilities. The diversity of such decisions helps explain the residential mosaic which was created in nineteenth century cities.

Sense of place, then, must be seen in its wider social context (Eyles, 1985) and this also means individual experience and biography. Migration and social relations play a significant role in that (Rutherford, 1990). Thus, although senses of place remain very personal and subjective, they are not entirely the result of one's individual feelings but are shaped by the social and economic circumstances one finds oneself in (Rose, 1995). Pred (1985) argues that this is what is meant by structured feelings - feelings conditioned by those social and economic circumstances (structures).

Sense of place therefore is a highly important factor in the construction of social morphology and important for this thesis. By it, agents act. Place sensed by one's social position, through Otherness or through biography, plays a role in determining structured feeling - place constructed by underlying structures, as the politics of identity (Massey and Jess, 1995). Place is a determining feature, therefore, of how individuals feel, in the same way class is. For this reason, place is a structure: a structure which is recursively reproduced as agents make decisions, or sanction their actions through how they feel about who and where they are.

The place based research on socio-space is wide-ranging in its coverage and focuses on every aspect of an agent's condition, ranging from life-course, to sexuality. This is to recognise the many and varied factors which determine how an individual feels about him or herself and about place. Although humanistic in its approach, the way in which place can be seen as a structure through which agency decisions are made, is a very valuable insight. The way an agent feels about a place, because of his or her class,

will affect residential decisions and socio-space. This is very important as it moves beyond the mechanistic interpretations of socio-space.

A combination of the insights of the four broad approaches would be the useful way to approach research into socio-space. Most approaches contain elements which can legitimately inform. To follow one approach slavishly may miss some important aspects of socio-spatial change. The approaches can be used in conjunction through the adoption of insights of structuration theory. Agency and structure can then assume equal importance. This can be briefly highlighted by considering the seemingly chasmic difference between built form studies and place based studies.

Research into the built form would be solely interested in the evolution of the built form of the city, its layout and its function. However, when you add to this the notion that the built form takes on a symbolism or a sentiment, as Firey (1945) suggested, a situation arises where two approaches to city-space can be combined. The layout of the Grange in Edinburgh would interest the urban morphologist, but one can add to this the meaning attached to the Grange - it spoke to Edinburgh residents in 1890 as an area inhabited by those who have 'made it' in society. Houses were indeed grand and the layout spacious, but the symbolism spoke of wealth, success, power and prestige. In this way, structure and agency can be combined. The structures in society which determined the location and layout of the Grange, it is argued, are precisely the structures which gave rise to its symbolism. Capitalism, class and place, created the Grange as an Edinburgh suburb, but also as an Edinburgh status symbol.

The structures identified above are place and time specific. At other times and in other places, the outcome would be different. The Grange was very much a child of its time, although it might be noted that the symbolism of the Grange has changed little in the past century. The wide-ranging literature reviewed so far has encompassed broader places and times than the period of study of this thesis. This is rectified in the following section where existing research on Scottish industrialisation, urbanisation

and mobility is briefly outlined. This not only provides a context for the ensuing discussion, but explores some of the more localised themes of enquiry central to this thesis.

2.6 INDUSTRIALISATION: PROCESSES, SCALES AND STRUCTURES

Most literature on Scottish industrialisation tends to be historical rather than geographical, though this is beginning to change.[46] The work is often descriptive in its approach and few authors directly examine the link between macro- and meso-scale processes. One of the most recent studies of the industrial revolution in Scotland is by Whatley (1997). He adopts a macro-scale approach concerned with the identification of the industrial revolution rather than with the spatial analysis of its consequences. It is true that Whatley outlines social aspects of change, but this is done using macro-scale themes, such as paternalism, uneven development, and market relations. Little attempt is made to consider how the industrial revolution affected towns. Indeed, this aspect is lacking in much of the literature and this thesis aims at redressing the balance.

Gordon (1983) refers to concentration as a key theme of capitalist industrialisation. By this he means the concentration not only of industry, but also of people. This took a specific form at the national level as urban centres in the central belt became dominant. Yet, even with this recognition, seldom do studies of Scottish industrialisation and urbanisation go into more depth about the impact upon towns. Meso-scale analysis is absent in the work of Marwick (1964), and from the writings of Devine (1988, 1995). In his study of Scottish urbanisation, Devine labours the point of change in connectivity between the Scottish urban centres. It is a point well made, but fails to appreciate the changing internal specialism which often facilitates such connectivity in an age where communications are becoming dominant. For instance, Edinburgh's morphology was to an extent determined by this connectivity. The Union Canal,

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[46] Examples of key Scottish work include Marwick (1936); Lyth and Butt (1975); Adams (1978); Gordon and Dicks (1983); Whittington and Whyte (1983); Checklands (1984); Devine and Mitchison (1988); Fraser and Morris (1990) and Whatley (1997).

linking the Forth to the Clyde, was the direct result of a need to link the east to the growing west where trade with America was becoming essential for the Scottish economy (Skinner, 1979).

Devine, like Gordon, recognises the concentration of the urban settlements and implicit in his work is the notion of an urban hierarchy. In chapter four of this thesis, a hierarchy is constructed to show how the importance of urban settlements of Scotland changed and, from this, to consider whether a burgh's position on the hierarchy affected its internal spatial structure. This line of research allows a discussion of the national changes to Scotland's urban network and the influences such changes had on the internal (meso-scale) spatial economy of the burghs and agency action therein. The current literature tends to overlook this inter-relationship. Where authors choose to study the changing morphology of a burgh, they do so without viewing the city as part of an urban network (Oakley, 1946; Fox, 1979; Gordon, 1979; Checklands, 1984; Hall, 1998).[47]

Doherty (1983) addresses Scottish urbanisation in a distinct manner with reference to the new industrial capitalism and the growing class struggle of the late eighteenth and nineteenth centuries. He shows how the inter-action of structures and agents affected the internal activities of cities. Examples are given of the housing market and growing class differences in a number of Scottish towns. The extent of these differences in Edinburgh and Perth is examined in chapters four and five. Dickson (1980) explains that the macro-structures of capitalism and industrialisation are related to growth in class consciousness as a result of urbanisation and, of course, influenced the

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[47] Gordon (1977) can be criticised for not paying enough attention to meso- and micro-scale changes, but his tendency is to emphasise the connectedness of the Scottish burghs which implies a high level of interaction between them (Lea, 1977). Hall (1998) and McKenzie (1999) provide detailed insights into the development of Glasgow and its focus on innovation, but miss the connectivity and scale question altogether except in a global context with Glasgow as the 'second city of the empire', something Oakley (1946) had stressed earlier. Connectivity is a Vancian notion, and an important consideration in the internal structure of a city. Indeed, Vance (1977, 1990) believes connectivity - the interaction of urban settlements within a national network, in terms of communications, trade and comparative advantage - along with the historic form and function of a city, determines spatial structure. The changes in any of these 'tripodal' factors precipitated structural change at any level of scale, but more probable at all levels inter-relatedly, lead to changes in the internal morphology of the city and affect place and personal identity.

individual's sense of place. The Checklands (1984) give urbanisation in Scotland extensive coverage but, if anything, their study pays too much attention to meso-scale changes at the expense of a consideration of macro-scale processes. Whereas this is useful for considering the processes at work within the city, analysis must take account of the macro-structures within the economy which conditioned many of the meso-scale processes of change, like the operation of the housing market. The most telling omission of the Checklands, however, is the scant reference to migration. Most writers accept that urbanisation led to population growth both nationally and in many of Scotland's cities (Lyth and Butt, 1975). Inevitably some towns and cities grew quickly while others suffered an absolute decline in population. The latter was especially true if a town was outside the influences of the central belt and had been, historically, a market town. But what is also true is that much of the urban population expansion in Scotland was due to migration (Jones, 1990). In nineteenth century Scotland the nature of industrial activity switched from rural to urban settings - from the domestic to the factory system. If people wanted work, they had to move. For many migrants their best opportunity was in the growing industrial towns (Jones, 1986; 1990).

Most writing on Scottish migration falls into two camps. The first discusses migration within the wider setting of the industrial revolution in Scotland in which the movement of people tends to be subsumed by the emphasis on other processes (Smout, 1987; Devine, 1988; Whatley, 1997). Alternatively, the Scottish experience is sometimes covered in a wider study of British migration, in which case the treatment of Scottish migration has a tendency to be rather cursory, or becomes an appendix to a study of English migration (Morrill, 1965; Stillwell *et al*, 1992; Pooley and Turnbull, 1998). Perhaps Scotland gets overlooked because of its small population, or because its records are kept separate from those of England. However, there is some notable work on the distinctive Scottish experience. Among the work specifically on Scottish migration, Withers (1985, 1986, 1988) focuses on the experience of the Highland migrants. Although this gives a vivid account, and has particular relevance for Perth, it does not provide a complete picture. The mobility of Highlanders cannot be considered

typical in Scotland during the nineteenth century because of their unique experience. They alone of all migrants had the trauma of the clearances and, for some, of famine. Jones, (1986, 1990) attempts a more representative national account but, in so doing, lacks the detail apparent in Withers' work. Both emphasise national patterns of migration. There is scant mention in the literature of intra-urban mobility in Scotland and there is a need to address this issue. Furthermore, there is no mention of mobility as a prime mediator of socio-spatial change, a role that should not be overlooked. Mobility was the means by which agents acted upon their structured feeling in responding to the operations of the housing market: it was crucial in socio-spatial transformations.

Jones (1986) maintains that Scotland conforms closely to the European demographic experience. By this he means that Scotland followed the mobility transition model proposed by Zelinsky (1971). Care is needed when using Zelinsky's models as it has over the years been subjected to numerous criticisms. Nevertheless, it can be used to as a broad guide to the migratory development of Scotland.[48]

Zelinsky (1971) cites Lee (1966) who asserted that, unless severe checks are imposed, both the volume and the rate of migration tend to increase with time. Such checks were becoming less frequent across Europe after 1850. Famines, war and disease, although still prevalent, were declining in their impact due to food surpluses, diplomacy - helped by the necessities of international trade - and medical advances. What took place was the unprecedented high growth rates of population accompanied by 'definite patterned regularities in the growth of personal mobility through space-time...and these regularities comprise an essential component of the modernisation process' (Zelinsky 1971: pp. 221-222).[49]

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[48] Woods (1993 p.213) summarises the criticisms of Zelinsky's hypothesis as too descriptive, follows rather than leads, encounters difficulties in defining terms, and is subject to ideological fashion and a creature of its time. Nevertheless it is 'realistic and sensible and surely cannot be ignored'.

[49] Zelinsky (1971; 1993) elucidates his hypothesis by offering eight related statements most of which are only feasible at a general level; some of the statements are far too general to be applied universally. For instance, it is known that Scotland experienced appreciable mobility in the pre-industrial era (Jones, 1990). This contradicts Zelinsky's first statement in which he views the pre-industrial period as sessile with severely limited physical and social mobility. Furthermore, Zelinsky claims that there are major,

Zelinsky (1993) does not claim that his theory includes the detail of a mobility transition; rather, it is intended as a sequential spatio-temporal addition to the demographic transition (which itself is only a general analytical-cum-chronological charting of the modernisation process). It is worth considering Scotland using Zelinsky's broad categories. In pre-modern times, Scotland, for the period, was a reasonably mobile society (Whyte, 1983, 1995: Houston, 1988).[50] In the 'early transitional society', massive rural-urban migration took place along with the colonisation of frontiers as 'displaced' and 'cleared' families were pushed to the coastal peripheries to eke out their living, as their erstwhile fermtouns had been turned into capitalist enclosed sheep farms. Planned towns, for instance Lawrencekirk, also attracted many displaced highlanders (Lockhart, 1982). There was significant emigration too, but no skilled immigrants other than a few English capitalists (Jones, 1983). By 'the late transitional society' the rural-urban migration had slowed, but still occurred along with a lessening of the frontierward movements. [51]

Jones (1986) points to key phases in Scottish history promoting increased mobility, such as the period after the passing of Scots Poor Law Act of 1845 which encouraged mobility in the search for work as relief became harder to come by. Doherty (1983) also stresses the importance of the growing dominance of the central belt creating inter-regional flows of migration which supplemented local urbanward movement. Centripetal migration intensified after 1850 and was furthered by the decline in the traditional craft-based rural economies and the agricultural depression (Devine, 1988). But migration within Scotland retained a regional bias. The eastern highlanders moved

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orderly, changes in the form and intensity of spatial mobility. It is difficult to find evidence for this in Scotland (Jones, 1986). Function, duration, periodicity, distance routing, categories of migrants and so on, did not alter. The same push and pull factors of migration were apparent both before and during the transitional phase - essentially socio-economic motives. What cannot be disputed is the change in scale of the movements. The frequency of movement and the numbers involved did increase (Jones, 1986, 1990).

[50] The reason for this could be the dispersed nature of the population. There was no intermediate settlement, like the English village, between fermtoun and burgh.

[51] The best way to view Zelinsky's model is in parallel with the demographic transition, and to an extent the Epidemiological Transition of Omran (1977). Both of these models can also be related to the work of Rostow (1990), used by economic historians as a guide to economic development.

to Aberdeen, Dundee and Edinburgh, while those from the west were 'pulled' to Glasgow, often in a stepwise fashion (Withers & Watson, 1991).

Most literature on Scottish migration has a tendency to be descriptive rather than analytical, uses quantitative data sources and emphasises macro-scale patterns. Other than in the work of Withers, little attention has been paid to the spatial impact migrants had on the destination city and there is little work on intra-urban migration. Existing macro-scale studies of Scottish mobility need to be complemented by more studies at the micro-level linking mobility directly to structures of society. This thesis aims to do this, as it not only shows structure / agency interaction at work, but it sheds new light on intra-urban mobility. Jones (1990) makes a valuable attempt to discuss the major structure / agency interaction within Scotland, but his study lacks attention to the internal changes within cities and underplays the significance of the dynamic character of migration. He probably underestimates the true extent of mobility in Scotland by this omission: a mobility which was historically relatively high (Flinn, 1977).

2.7 CONCLUSION

The literature cited in this chapter cannot claim to be exhaustive on the subject of urban spatial studies. Nevertheless, during the course of the chapter, four broad approaches were identified and discussed, with reference to the role of structures and agents. Several conclusions emerge in the form of criticisms regarding the literature. In this final section, these criticisms are outlined in the light of the position and research approach adopted in this thesis. The first focuses on the reliance on one scale of enquiry; the second examines the choice, selectivity and definitions of data sources and methods and the third criticism concerns the determinist / humanist dichotomy.

A criticism of much of the literature reviewed in this chapter concerns the nature and scale of enquiry. Analyses tend to concentrate on one scale of enquiry. As a result, some factors of change are overlooked (especially those operating at the micro-level)

and the scope of enquiry is narrowed. For instance, the urban morphologists and urban ecologists are concerned exclusively with the city as a unit, and although the social-area approach does, at least, extend research to small (micro) areas, this is not a prerequisite. Again the emphasis is on city patterning and not on the links between micro- and meso-scale areas.

The place based research is agent centred, or concerned with the sense of place or representation felt by individuals in particular areas - this could include concepts such as nationalism, but also social exclusion. Generally, research will focus on a limited geographical area (for example, Fortress City). The place literature reviewed in this chapter was somewhat nebulous in its scope of enquiry, but a local, regional and national element is at least recognised. Nevertheless, the failing of the place based material lies in the fact that, although different scales are recognised, the relationships between them are not. This thesis will show that macro-structures such as industrial capitalism had profound spatial impacts within the city in terms of changing socio-space. However, these macro-structures were not solely responsible for socio-spatial change, as it is recognised that the myriad decisions and actions of individual agents, themselves acting within and being constrained by the macro-structures, also influenced the meso-scale socio-space. This relationship is termed the structuration process and put succinctly can be explained by stating that structures exist because agents enable them to do so; but that the agent's enabling action is conditioned by the very structures they enable.

Thus, each of the approaches outlined in this review focus on a different aspect of the city, and by doing so the enquiries are necessarily at one scale. This means difficulties arise in terms of integration of the work. It should be recognised that the city is a complex organisation made up of many parts, which, in order to be fully understood, at the very least should be studied integrating its many parts, and this will mean that research should not be focused on one scale. Moreover, this thesis recognises the many and varied factors which contribute to the complexity of the city and its internal spatial

structure, and that these factors comprise both the macro-scale socio-economic structures and the micro-scale agency activity within the city. By examining the meso-scale city in terms of both structures and agents, and with macro- and micro-enquiries, a more holistic explanation of the changing internal structure of cities will be achieved.

In order to reach a better explanation of the internal social-morphology of the nineteenth century city, researchers have many sources and methodological approaches they can use. But this in itself can lead to criticism, in particular over the source and application of data and methods chosen for research. Indeed, two pieces of similar research can reach startlingly different conclusions through using different techniques, source data or even definitions of concepts such as 'differentiation'. The different conclusions reached by Pooley and Ward for similar studies of nineteenth century spatial change is testimony to this. A more detailed examination of their works reveals that a definitional distinction explains their different conclusions. Thus, although it would be rather dull and limiting if researchers used the same definitions and techniques all the time, the definitions used of, say, differentiation, should have some element of consistency, even if interpretations differ according to different conceptual standpoints. Massey and Denton (1988) have identified at least five different dimensions to residential differentiation, each using a different measurement. Each measures a different aspect of differentiation. Thus, clustering, ghettoisation and socio-spatial evenness, are all different dimensions of differentiation and distinctly so. Comparative studies of differentiation should, at the very least, use the same dimensions, or if not, recognise that differences are at the conceptual and not empirical level.

One of the main limitations of much historical research is the danger that it will be 'data-led'. Data selectivity tends to limit the questions asked and may therefore provide only partial answers to research questions on a topic such as socio-spatial change. This criticism holds for research which is focused too narrowly on one aspect of the city and uses only a narrow source base in research. Key questions are obviously

going to be overlooked. Further, research is often carried out using the most easily available sources, which again can mean highly selective studies. In this way, other equally valuable sources may be overlooked perhaps because they are too time-consuming to analyse or are not easily obtainable. The four approaches described above, in their source selectivity do stand accused of limiting the questions they ask to those which can be answered using particular sources. For instance, the urban morphologists look no further than physical layout and town plans: but sources such as company records, personal diaries and the like, might give more idea of the reasons behind a particular urban form. Consequently, important aspects of the built form are missed. The same is true of the urban ecologists who derive conclusions based on modelling and extrapolation. The social area approach is often highly quantitative, using numerical data to identify distinct areas within the city. The place based literature may stand accused of too much subjectivity if the focus is too much on individuals.

Researchers, especially those conducting historical research, should recognise the dangers of data-led enquires. The availability of source data will always limit the answers which can be given, but it is the questions asked that must guide the analysis. The literature cited in this review was discussed in terms of a determinist / humanist dualism. A striking characteristic of each of the four approaches considered is the attention they give to a particular methodology. This perhaps is unsurprising, given that each of the four approaches can be distinguished from the others. By comparing all four, it becomes evident that none of these approaches provides a comprehensive view of urban change, for each tends to concentrate on a particular aspect of the city, as outlined above. For example, the built form approach is primarily concerned with urban structure and spatial patterns. It is also highly deterministic in outlook. Agents are not seen as active within urban space, but rather, by implication, their spatial location is treated as a result of (or response to) the built form of the city. Similarly, the urban ecologists recognise the activities of agents, use nomothetic devices and models to conclude that (socio-)spatial patterns within the city are process driven, with

agents responding to ecological imperatives. Conversely both the socio-spatial and place based approaches tend to over-emphasise agency, often to the exclusion of the influence of structures. Much of the recent work in the place based literature is focused on the perceptions and understandings of individuals. While this provides a more detailed view of active human agency, the constraints with which agents operate are frequently underplayed. Thus, the meso-scale urban patterns, which are the central concern of the ecologists, are reduced to a myriad of individual perceptions and responses and become lost to view.

Of the four approaches, the socio-spatial approach comes closest to recognising the interaction of structures and agents, but does so almost accidentally. The principal concern of authors such as Pooley and Ward is the actuality of social areas: the reasons and rationale behind, say, residential differentiation. Consequently, Pooley (1983) observes that there is likely to be a debate: on the one hand over the extent and scale of residential differentiation and, on the other, over the effects on, say, social relations. Attempting to understand the links between these issues which Pooley identifies, goes a long way in bridging any potential humanistic / deterministic dichotomy.

Some criticism of deterministic work has centred on the fact it is too ideologically driven (Cloke, *et al*, 1991) although this generally applies to the early Marxian analysis within geography. More pertinently, deterministic approaches can be criticised in three specific ways. First, the importance of human decision making is overlooked as structures in society are given exalted status. As a result the complexities of capitalism and class are overlooked as they are treated monolithically. In reality, both of these structure are very complex. Second, emphasis on these monolithic structures as central driving forces of societal development ignores many other forces and grossly over-simplifies the nature of such concepts as social class construction (Robinson, 1998). Thus, thirdly deterministic approaches can overlook key sources which may appear irrelevant to the research questions they pose and the methods used in their analyses

This latter point is also a substantial criticism of the more humanistic approaches in socio-spatial studies which too has some drawbacks. The crucial role of agents as perceptive, interpretative shapers of society seriously overstates their relationship with the structures of that society and, and this is a rather contentious point, overstates the intellectual capabilities of many agents to engage in a way that allows them to perceive and interpret as individuals. Many of the approaches adopted by humanistic geographers have relied on qualitative sources, including interviews and diaries, which can be unreliable, partial and even quixotic. Further, not all agency activity is as purposeful as much of the humanistic research implies. Human action can be unconscious as well as conscious, involuntary as well as voluntary.

In essence, deterministic geography is too structurally based, and humanistic geography too people centred. There is, therefore, a need to integrate these and to recognise that research into socio-space, and in geography more generally, should not concentrate on one set of dynamic factors, whether they be related to human agents or to socio-economic structures. This allows for the view that structures, together with agency processes and mechanisms, can reveal 'reality' (Cloke et al, 1991), and that both are equally important in this reality (Robinson, 1998). Thus, to advance the understanding of the spatial impacts of industrial change there is a need to move beyond the existing determinist or humanist approaches and adopt a more integrated conceptualisation of the socio-spatial change, as attempted in this thesis. This review of existing literature on urban space has discussed some of the strengths and limitations of the sources and methods that have been used in previous work. In attempting to overcome some of the limitations noted, this thesis adopts a range of methods and uses a variety of data sources. The next chapter explains more fully why the sources used in this research were selected and how they are employed.

CHAPTER THREE

SOURCES AND METHODS

3.1 INTRODUCTION

The aim of this chapter is to provide a critical assessment of the sources and methods used in this thesis. Underlying the choice of sources and methods is the need, identified in the discussion of chapter two, for a more integrated approach to socio-spatial research which gives both structures and agents equal prominence. Data availability and time constraints place their own limitations on the extent to which integration can be achieved within the conceptual framework outlined in chapter one. Nevertheless, by first sketching a conceptual understanding of the relationships between structures and agents and then proceeding to examine available data sources, some of the limitations of previous research discussed in the last chapter can be overcome.

The research focus of this study is at the meso-scale, that is, the processes and patterns associated with urban change within two case study settlements - Edinburgh and Perth. Thus, the scope of research is more detailed than a national survey of socio-spatial change, yet, it recognises that changing structures at the national scale influence changes within the settlements themselves. In contrast, active agents making decisions to move their place of residence are seen as having greatest impact at the micro-scale, often changing the social composition of small areas. Meso-scale processes and patterns can thus be represented as the outcome of interactions between macro-scale structural change and the micro-scale impacts of the behaviour of many individual agents. Such a representation begins to break down the main dualism inherent in previous research, but the extent to which the complex recursive relationships between structures and agents can be empirically investigated must depend upon the nature of extant data sources and the methods employed to analyse them.

The empirical research of the following chapter combines elements from the broad approaches identified in the literature review. First, structures and structural change at a national level are identified with explicit reference to industrialisation. The impacts of these national structural changes on the main urban centres of late nineteenth century Scotland are then discussed. This line of enquiry takes inspiration from the urban morphological approach to urban research, which is directly concerned with the impacts on urban structure of industrialisation, war, technical change and natural disasters (see Whitehand, 1999). Once the national impacts of change have been identified, maps of Edinburgh and Perth are presented to identify any patterns of spatial change. This is done in a manner not dissimilar to the urban ecologists' approach. Although a model is not derived, the importance of the initial survey of density and social status distribution maps is that it allows spatial change to be identified and focuses research on particular aspects of change. The more detailed aspects of the research which follow on from this draw inspiration from the socio-spatial studies identified in the literature review and the more recent 'place' based work. Thus, analysis of socio-space is carried out areally and individually using a number of different techniques to establish the structural and agency factors influencing change within the city. This considers both macro-structures affecting socio-space and how agency decision making at the micro-scale, influenced by these macro-structures, produces urban (meso-scale) socio-spatial change.

The techniques, methods and sources used in this thesis are examined below and centre on the research aim to advance the understanding of the spatial impacts of the industrial revolution by viewing them as the outcome of the reflexive relationship between structures and agents. Framing an understanding of socio-spatial change in this way draws insights from structuration theory to explicate that both structures and agents have an equal role in socio-spatial change. Whereas some researchers may view the use of the highly abstract concept of structuration as difficult, if not impossible, to

apply to empirical research (see Gregson, 1989), in this thesis suggests that it can be, helpful in advancing understanding of socio-spatial change.

In the remainder of this chapter the methods and sources used in this thesis are outlined. These are arranged in the order in which they arise in the thesis, but crucially descend from a macro-scale enquiry, through the meso-scale, to the micro-scale. What becomes obvious from this is that analysis becomes more detailed the smaller the scale, when individual agents are examined. Each of the following sections introduces the aims of the thesis at each scale of enquiry asking how the examination will proceed at each scale. The sources available are then discussed and those used are introduced, outlining the reasons for their selection and their strengths and weaknesses. Furthermore, it is often necessary to outline the reasons why alternative sources have been rejected.

The chapter should furnish the reader with a greater understanding of the sources and methods available in socio-spatial research, but also identify the ways in which the methods and sources of analysis fit, not only the empirical investigation of the thesis, but also the underlying conceptual framework.

3.2 MACRO-SCALE SOURCES AND METHODS : NATIONAL CHANGE

The purpose of the macro-scale analysis section is essentially to show national spatial changes and changes to macro-scale structures within the Scottish economy and society between 1850 and 1900. This will outline the main structural changes and identify the ways in which these changes impacted upon urban settlements. The aims are necessarily limited in this section as there is insufficient data to advance any argument far. Nevertheless, the section is important to provide a background of change and to introduce the main macro-scale structures. Three such structures are introduced which correspond to the structuration grid in chapter one, namely class, place and capitalism.

The far reaching changes to industrial capitalism, largely occurred before 1850. After this date the capitalistic process was consolidated and far reaching changes within the economy and society occurred. These are outlined in chapter four in two related ways. First, two urban hierarchies are constructed, one for 1851 the other for 1891. These hierarchies show the twenty most populous settlements in each of the years. The changes in the rank order of settlements can be noted. The hierarchies are then related to other statistical tables which show economic sectors and place of birth data for selected burghs. Thus, population change is related to socio-economic variables. This allows a discussion of which 'type' of settlement was increasing or decreasing in the hierarchy, allowing geographical and change to be noted along with assessing the extent to which industrial burghs were growing fastest.

The social changes brought about by the growth of industrial capitalism can also be identified using economic sector tables for selected burghs. These show the ways in which burghs changed composition and provide a useful guide to the growth in the middle and industrial classes. Furthermore, place of birth data also provide some evidence, albeit less than concrete, concerning the extent of in-migration to burghs. This too may suggest a magnet within certain burghs, perhaps employment opportunities, which attracted many migrants to the burgh.

The link between industrialisation and mobility is explored using place of birth data. In the absence of any detailed breakdown of migration in terms of last known address, use must be made of the place of birth tables in the census. This is far from perfect, but suffices to obtain a broad guide to mobility levels. What a table based on place of birth cannot do is provide an accurate guide to the effect of in-migration. Deaths among previous migrants, losses by re-migration and natives who left their burgh of birth but returned during an intercensal period, are not included at all. It is difficult to compensate for these. Deaths among life-time migrants are particularly problematic

given that they are influenced by the socio-economic structure and age profile of migrants. These are not obtainable from the published census tables.

The structure of place is difficult to conceptualise at the macro-scale, save that of analysis of nationalism. This is not within the remit of this thesis, where place, as a structure, is regarding as an agent's sense of belonging to a particular class, or as part of the capitalist production process. As such, individuals place themselves through a series of structured feelings and 'moral' sanctions. This is necessarily better examined at a micro-scale. However, the changes to how individuals feel and place themselves can be extrapolated from the population, economic sector and place of birth tables, inasmuch as these indicate the potential for growing class awareness through a greater division of labour.

Thus, the three structures are examined at a broader level than they will be in later chapters, reflecting the limitations that exist at the analytical level. Detailed sources are generally either difficult, if not impossible to obtain at a national level. The sources used for the macro-scale analysis are essentially taken from the published census returns from 1851. These contained fairly reliable information regarding population of burghs which can, if necessary, be corroborated with the Registrar General's annual reports. There is, however, one significant shortcoming with census derived population of burghs, namely the changes to the boundaries of settlements - what defined the burgh? Burghs grew and their boundaries changed. The census often kept to historical boundaries, so underplayed the exact population of burghs. This was especially true in Glasgow. Edinburgh and Perth also had boundary extensions. In order to overcome this shortcoming, the analysis in this thesis uses what the census describes as the "administrative boundary" of burghs throughout. Although these boundaries changed (this was inevitable given the growth of towns at this period), nevertheless, administrative Edinburgh in 1851 can, at least, be compared to administrative Edinburgh in 1891.

In order to consider class and place, albeit fairly broadly, and the changes thereto over time, economic sector tables are constructed based upon the occupational tables in the various censuses. These provide a detailed breakdown of the various occupational groupings. Conveniently, the Registrar General splits the manual and non-manual, and within this division there are further divisions based upon levels of skill and education. This is convenient as it is the method employed later in this thesis to construct the social status typology. Any changes noted in the economic sectors may reflect the growth in capitalism, but also the changes in the levels of middle class or working class employees in the various burghs. From this, the first indications of class awareness or changes to an agent's sense of place can be conjectured.

However, as with population tables the use of occupation tables also have some shortcomings. Employment sectors are calculated by the Registrar General based upon occupation which was sometimes inaccurately recorded by enumerators. For instance, the owner of a factory might be labelled 'manufacturer' along with most of his work force. This is more problematic at the meso- and micro-scales, when occupation is used as a determinant of social-status. The justification of using economic sector tables is that they establish the extent to which burghs were affected by the onset of industrial capitalism, but furthermore, how this, in particular, affected their position in the urban hierarchy.[52]

Despite the shortcomings of the macro-sale data, the analysis at this scale will point to those burghs experiencing fastest growth within the urban hierarchy, industrialising fastest and suggest social and spatial change. Edinburgh and Perth are singled out in particular and their growth and position in the hierarchy, relative to other burghs, is assessed. Ingram (1992) has shown that Scottish towns experience different levels of urban growth since their function reflected different aspects or phases of

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[52] Occupation is used to determine economic sector (as with the above case) and social status. The former is related to the capitalist position of an agent, or the *place* of an agent within a capitalist structure, whilst the latter relates the agent to his or her *place* within the class structure. Capitalism, class and place are therefore linked conceptually at the macro-level of analysis. This fits with Giddens' (1987) notion that the structures in society are inseparable.

industrialisation. In chapter four this is touched upon, as it is shown that the link between industrial growth and population increase is strong, and burghs experiencing high levels of population growth experience high levels of in-migration. This points to burghs reflecting different stages in their industrial development with some advancing more rapidly than others (Adams, 1978). It is argued that as the functions of towns change so do their internal spatial patterns. Conzen (1960) recognised this change at the built environment aspect of urban form; but internal spatial change also needs to be considered at the social aspect as burghs consist of people as well as buildings. To that end, Perth and Edinburgh are used to assess the functional changes within a town and internal socio-spatial morphology.

3.3 MESO-SCALE ANALYSIS

The identification of the main factors of change at the macro-level allows analysis to proceed to the spatial impacts these national changes had in Edinburgh and Perth - the burghs selected for closer analysis. The decision to choose Edinburgh and Perth for study was largely made based on the lack of socio-spatial studies for these burghs at present and to consider the extent of spatial change in non-industrial centred burghs - a further point often overlooked in nineteenth century studies. Edinburgh has received some attention in the work of Gordon (1979) and Gray (1973; 1977) but Perth has seldom, if ever, been examined. The lack of attention is may be due to the assumption that, not being industrial towns, Edinburgh and Perth are of little interest in the nineteenth century. This thesis suggests, however, that industrialisation was only one impact of the onset of the capitalism.

The aim of the meso-scale analysis is to elicit a greater understanding of the spatial impacts of the industrial revolution. This was not possible at the macro-scale in any detail, hence the thesis uses two case study settlements. It is argued in chapter four that the structural changes outlined at the macro-level had an impact on the spatial pattern of the burgh. This is investigated. Furthermore, the concept of agency decision making

within socio-economic structures is introduced to explain how structure / agency interaction was leading to socio-spatial change. Thus, the meso-scale study has two parts. First, the socio-spatial change within Edinburgh and Perth needs to be assessed. for instance, to what extent was the socio-space of the burghs changing. Second, the reasons for this change need to be advanced. It is this latter part of the meso-scale study which uses the conceptual framework in some detail to explain how structure and agency interaction is the key to the greater understanding of socio-spatial change.

As way of introduction to the meso-scale study, the factors which affected Edinburgh and Perth as a result of macro-scale changes to the economy and society are outlined. From this, maps of class distribution and population density allow a broad sketch to be made of spatial change within Edinburgh and Perth from which questions are raised concerning the nature of this change.

The maps of Edinburgh are produced using ecclesiastical parish boundaries, whilst those of Perth use enumeration districts (EDs). The fact Edinburgh had over fifteen hundred EDs meant that a social status analysis of each would have been prohibitively time-consuming, thus, ecclesiastical parishes must suffice. They are, at least, relatively small and do not cover widely divergent areas (Higgs, 1996). For each areal unit, and for three census years - 1851, 1871, 1891 - the percentage distribution of four social status groups is mapped. This reveals the areas each group dominated and changes over time can be noted.

The discussion of the impacts of macro-scale changes on Edinburgh and Perth, coupled with the use of maps showing social status distribution and population density change provides some indication of spatial change. However, the scale of the maps and lack of any detailed breakdown of the data will mean that few conclusions can be made regarding socio-spatial changes. To be sure, spatial change may be indicated in these maps, but what sort of change is it? Thus, analysis is needed of the changes taking place within Edinburgh and Perth indicated by the maps. A useful way of doing

that is to consider socio-spatial polarisation in terms of residential segregation. This necessarily considers the extent to which the social groups were living increasingly (spatially) separated lives. This separation is likely to have resulted from of number of factors associated with structural changes and agency. In fact, Perth alone is selected as a case study, as it has only thirty EDs - the areal unit used - compared to over fifteen hundred in Edinburgh.[53] The use of Perth has other advantages which are discussed below. The importance of the indices is to help conceptualise socio-spatial change in terms of residential evenness and exposure and as such only one settlement is necessary to undertake this conceptualisation.[54]

Residential differentiation is a difficult term for the simple reason it can be defined in several different ways (Massey and Denton, 1988). Massey and Denton seemingly responded to Buttimer (1969) who stated that any analysis of socio-space should include a conceptual consideration of social (or residential) differentiation. It is not enough to say that two or more social groups live separated. Instead, it must be asked what is meant by "separated" or "differentiated". Massey and Denton (1988) identified five different ways, or dimensions, in which residential segregation can be conceptualised and then measured. The reasons why only two of the five are used can be explained.

Of the five dimensions identified by Massey and Denton (1988), evenness and exposure are best suited for the research in this thesis as they provide a holistic approach to socio-spatial change, inasmuch as they include in their measurements all social groups and every part of the city.[55] Moreover, evenness and exposure are best

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[53] Enumeration districts were chosen as the areal unit as data can be easily calculated for them owing to the enumerator's schedules that are available from which occupational derived social status can be ascertained. Moreover, the EDs remain static in terms of area for the three years of study, which allow temporal comparisons. However, in chapter four, the analysis on the indices is made in the light of the obvious drawbacks of any areal units - namely the arbitrary nature that they are drawn and the population distribution therein. Both of these will affect socio-space and the interpretation of the analysis of indices of differentiation must be made in this light.

[54] The use of Perth alone is also made imperative because of the huge number of EDs in Edinburgh and the prohibitively long time it would take to calculate indices .

[55] Evenness and exposure dimensions allow comparisons between social groups over time; they are more concerned with these links, rather than with the physical take up of space, or the distances involved from the centre, which other dimensions highlight.

suited to the underlying conceptual framework of this thesis. Both dimensions can reveal a structure / agency interaction within the city leading to socio-spatial change as they are directly concerned with the differential distribution of social groups across the city and the degree to which members of these social groups are in contact with each other (Massey and Denton, 1988, p. 283). For instance, the way in which a particular social group may respond to a growth in class consciousness by becoming socio-spatial polarised from other groups can be gauged, and done so by considering the structural change and the outcome of the agency action spatially.

Of the five dimensions identified by Massey and Denton (1988), evenness and exposure are the most suited to the underlying conceptual framework of this thesis. Exposure attempts to measure the interaction of agents albeit residential interaction, which resulted in changes to socio-space. Evenness identifies the departure from an even distribution of the social groups across the city: a departure which is the result of agency action one way or the other, either voluntary action or involuntary action. The latter implies the existence of urban gatekeepers influencing agency decision making. Clustering, centrality and concentration (the three other dimensions) focus respectively on measuring one aspect of spatial distribution of social groups.

Three other dimensions of social differentiation are identified by Denton and Massey, but are not included for analysis in this thesis: the reasons for this need to be clarified. 'Concentration' refers to the physical space taken up by a minority group, although different social groups within a city could be examined in this way too. Thus, a group that utilises only a small part of the city (proportionately) is residentially concentrated. If this research were interested in the process of ghettoisation, then concentration would be the preferred concept for the analysis.[56] This dimension must therefore be rejected as its analysis is restricted to small areas of concentration of a particular social group, no explicit account is made of the rest of the city. A related concept is that of

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[56] Withers (1999) believes that class rather than ethnicity was the major factor responsible for socio-spatial polarisation. He has shown that, amongst Highland and Irish migrants, there still remained distinction within these ethnic groups by social class.

'centralisation', and differs from concentration as it refers specifically to residential concentration of a group within or near the urban core. Centrality, as a dimension, is not studied in this thesis as it again restricts analysis to one area of the city. Whether an individual can be consider to live 'centrally' or not is of less importance in this study than his or her social polarisation. The central area of the city is only one part of a dynamic organism and concentration on one part of the city may miss socio-spatial processes elsewhere (Edwards, 1962).[57]

The concept of 'clustering' may be confused with concentration: however, conceptually they are different. The former refers to the extent to which areal units adjoin one another, or 'cluster in space' (Massey and Denton, 1988 p. 293), for instance, racial enclaves or what White (1983) terms "checkerboard" patterns - side scattering of minority groups across a large area. One way of measuring clustering is to use an index which compares average distance between minority and majority members. When the index is nought the minority members display the same amount of clustering as the majority members. If the minority group were less clustered the index is negative.[58] Clustering as a dimension is best employed for an examination of how one particular social group clusters across a town. It does not necessarily relate that group to other groups and as such is only partial in its coverage of socio-space. As such its use must be rejected in the present study.

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[57] The most widely used statistic in the computation of centrality is the proportion of a given group living in the 'central area', expressed as a percentage of the city as a whole. This can be extrapolated to consider the particular groups within the central area and expressed as a percentage of the total number of that group (minority, social or otherwise) in the city. The drawbacks to this apparently straightforward method of computation lie in how one defines a central area. Often this is done arbitrarily. Furthermore, no account is taken of distribution. Duncan and Duncan (1955) proposed a 'relative' index - a gradation of centrality, and considering (ethnic) social group's position within a graded system, a grade of plus one representing full centrality, and minus one full peripherality. A social group considered to be +0.6 for instance is thought to be more located towards the city centre than a group who is graded -0.3, say.

[58] Other methods include the spatial proximity approach - the average of inter-group proximity, weighted by the compositional fraction of the social groups in the population. Here, an index of one reveals no differential clustering between two groups, and an index greater than one reveals members of each group living nearer one another than to each other. The concept of clustering is best suited to a study of ethnic groups and their influence on space, rather than to a survey of socio-spatial residential differentiation.

Evenness is not measured in any absolute sense, but rather, is based on a scale where social groups are compared relative to each other. Evenness is said to be maximised and segregation minimised when all units have the same proportion of social groups as the city as a whole. The indices of dissimilarity and segregation are the most widely used when investigating evenness.[59] The dissimilarity index equates to the 'percentage of a population group which would have to shift residence in order to reproduce a spatial distribution identical with that of the group which is being compared' (Peach, 1975) - in other words, to (re)produce evenness, or an even distribution of the social groups in a city or full socio-residential integration (Robinson, 1998, p.256). A change in the index of dissimilarity over time would be an indicator of socio-spatial change because it addresses, specifically, the differential distribution of two or more social groups among areal units of the city (Denton and Massey, 1988).

The index of segregation allows a particular social group to be compared with all the others in the entire population of the city rather than just one other.[60] A higher percentage points to a higher segregation of a social group from the other groups within the city (Johnston, 1980). It is likely that social groups at the social extremes will have higher indices.[61] Thus, using both indices, the departure from socio-spatial evenness across the city as a whole for each of the social status groups can be ascertained and the average residential segregation between two social status groups can also be gauged. Again, changes to the segregation index of a particular social group point to an increase or decrease in socio-spatial polarisation, as they indicate a

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[59] For example: Tauber and Tauber, (1965); Massey (1978); James and Tauber, (1985). See appendix for the calculations.

[60] This is useful as it allays the criticism of the dissimilarity index that it does not take into consideration the closeness some groups have with each other, for instance, the upper and lower non-manual group, and the effect this would have on the overall index. A full picture of differentiation cannot be given with the index of dissimilarity as it compares two groups only. It is best suited for majority / minority groups. However, it does show which groups in society were most segregated from other groups.

[61] For instance, the upper class will have a higher segregation index than the lower middle class because the former is an extreme group within the social hierarchy, and as such more isolated from the rest of society, in terms of wealth, lifestyle, income, power and so on (Johnston, 1980). In fact these are factors which help sanction the behaviour (and decision making) of agents, and is referred to as 'moral interaction' in the structuration grid in chapter one.

growth or decline in the segregation of a particular group. This also implies residential mobility.

The indices of dissimilarity and segregation are limited in the way that their value may be affected by the unequal size and the number of areal units considered and the population distribution of the city.[62] Moreover, they both use only one variable - social status in this case - as a means of differentiation. In reality there are likely to be more factors, other than class or status, that affect residential differentiation. The former limitation is difficult to overcome. However, the smallness of Perth means that the EDs do not vary in size as much as those in a larger burgh. For this reason confidence in the indices for Perth is quite high. The second limitation is overcome by the very nature of this survey - that is socio-spatial - where it is suggested that the determinants of social-status used in the typology best reflect the 'tiers' of society. Were this a study of spatial change more generally, considering factors other than social status, perhaps race or religion, then the use of occupationally derived data for the social status groups would mean only a partial investigation.

The concept of exposure usually refers to the degree of 'potential contact' between social groups or the level a minority group is in contact, spatially, with a majority group (Denton and Massey, 1988). The usual measurements are the indices of isolation and interaction.[63] The main criticism of the exposure concept lies in its 'experience' approach to differentiation. Exposure indices attempt to measure the experience of segregation felt by the average minority or majority member (Denton and Massey, 1988): in reality such 'experience' is difficult to measure quantitatively. However, the indices do point to levels of physical confrontation. Both indices fall between zero and unity (and added together must equal unity). Conceptually they are viewed as the *probability* that a member of a particular social group from within the city will share a 'residential area' with a member of another social group (interaction index) or the

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62 This is considered in some depth in chapter four.

63 These are widely used by Lieberson (1981), Lieberson and Carter (1982) and Massey and Bitterman (1985).

same social group (isolation index). Changes in the indices of interaction and isolation point to a growth or decline in residential differentiation and as such are useful measures of changing social morphology (Denton and Massey, 1988).

The main difference between the evenness and exposure concepts is in the dependence on the relative size of groups being compared. For exposure indices, the size of status groups is important, but evenness indices are concerned with the spread and departure therefrom of social groups across the whole city, regardless of size.[64] Two sets of indices are used because they highlight the different effects of scale. Evenness indices highlight the meso-scale because their change is attributable solely to shifting population in the city. Exposure, as well as accounting for meso-scale factors of change, incorporates, as a concept, macro-scale factors such as urbanisation. An urbanising population leads to functional differentiation (Durkheim, 1933), expressed by a division of labour. The division of labour which grew out of the industrial capitalist production process was a significant factor in the growth of status consciousness which is expressed spatially by residential differentiation (see Jones, 1962). Exposure is better suited to gauge this as it directly assesses levels of potential contact, rather than a departure from an 'ideal' evenness of social groups.

The meso-scale analysis begins by examining the main factors driving change within Edinburgh and Perth before moving on to assess socio-spatial change. The ways in which this will be undertaken have now been advanced. The question of what sources are to be used must now be considered with reference to the limitations they may impose.

The social status typology used for the distribution maps and indices are constructed using occupational data of heads of households from the census based on the

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64 For instance, minority groups can be evenly spread across the residential areas of the city, yet experience little exposure to the majority group (Blau, 1977). Furthermore and conversely, if in very small numbers, a minority group's members will tend to experience high levels of exposure to the majority despite the pattern of evenness. Exposure indices take explicit account, therefore, of the relative size of social groups in determining the degree of residential segregation between them (Denton and Massey, 1988, p. 287).

classifications by the Registrar General. Heads of household are initially split, manual and non-manual in terms of their occupation, these two groups are then divided again. It is a method adopted by Ward (1980). In the case of the non-manual social status group, the upper stratum equates to the professional classes and landowners (as identified in the census), while the lower stratum refers to the more routine and white collar clerical employees.[65] The manual social status group is divided based upon levels of skill, training and apprenticeship (criteria specified in the Registrar General's notes). Thus, there is a skilled manual group, and a semi- / unskilled group.[66]

Occupationally based social status groups have been used by a number of researchers and should be 'homogenous in the basic criterion to the general standing within the community of the occupations concerned' (Banks, 1978 p.184). This is to recognise social status as important and implies contemporary perception (Wrigley, 1972). Furthermore, each of the socio-economic groups should contain 'people whose social, cultural and recreational standardised behaviour are similar' (Banks, 1978 p.185). Banks acknowledges that in a census such qualitative data is wanting as questions concerning behaviour and values are not asked. But, he believes that occupation does provide the best available surrogate from what is available, based on its link with status perceptions by society (see Heiton, 1861).[67]

Occupation is not the only criterion used by researchers to assign a social status upon an individual or to construct a class typology. Residence and rateable value have also been employed.[68] Gray (1973) views these criteria as the most important way to judge social status. He cites the Royal Commission on Housing 1884-85 as proof, adducing

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[65] Full details of which occupations fall into which grouping can be found in the appendix. The division in the non-manual group is based on the successive census gradations between 1851 to 1891.

[66] The 1851, 1871 and 1891 census occupation summary tables have been used to identify which manual occupations are skilled.

[67] The census used occupation to distinguish social classes as early as 1831. Then the classification was simply, 'employer', 'employed' or 'self-employed'. In 1841, occupation was classified based on type of work one was involved in: agricultural, manufacturing or other. Later it became more detailed, but it still often failed to distinguish between a tailor, a master tailor and an apprentice tailor. Thus, care is needed when using occupational class as a surrogate for social status and it is often best used along with other variables such as keeping of lodgers, servants or rateable value (Fox, 1979).

[68] For instance rateable value is used in the work of Holmes (1973) and Gordon (1979). Fox (1979) uses both occupation and residence in his work on the social areas of Stirling.

the picture of well matched and well-understood gradations of the type of working class housing in a strict hierarchy. This leads Gray to conclude that, within Edinburgh there existed in a given housing type, a labour elite. Aspirations of this group will be higher than those of the rest of the lower class, hence the grander houses (Gray, 1973) a point raised in chapter five.[69] Here a methodological problem is inevitably encountered - that of overlap. The rigid occupational tiers point to a distinction between the non-manual clerk and the manual labour aristocrat, say a master mason. Furthermore, often highly skilled manual workers were paid more than routine office clerks (Cannadine, 1998) so a further complication is added to status derivation, namely, should income be taking in to consideration. The insurmountable difficulty of ascertaining agents' income prohibits this. Another definitional problem arises when one considers the semi-skilled group. Do they, for instance, belong in a category of their own? It is likely they would include workers with some level of training although nothing as formal as an apprenticeship - they might include, spinners, malsters and dyers.

The limitations of a four-tiered social status hierarchy must lie with the fact that nuances will be missed. The 'labour aristocracy' although falling into the skilled manual group, is at the top of this group and contrasts considerably with other skilled workers. The distinctions of styles of life, which (Gray, 1973) speaks of, indicate the deficiencies of relying solely on occupation as a guide to social status. Heiton, writing about the 'castes' of Edinburgh in the early 1860s, speaks of a highly graded society: even within the same professions, such as law, their existed palpable social distinctions between, say, an advocate, a Writer to the Signet, and a Messenger at Arms. The same was true in other professions (Heiton, 1861, pp. 158-176). Thus, ideally, more than occupation ought to be used to construct a social status typology, although there may be difficulties with this due to lack of reliable data sources.

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[69]Although such aspirations will generally be manifested in living conditions, Gray believes behaviour also has much to do with it: the type of leisure activity, commitments to sobriety, patriotism and respectability, all make up what he calls the style of life (Gray, 1973).

In this thesis, four, generally broad, social status groups are used, in line with the Registrar General's classifications are contemporary perceptions of occupation and status groups (see Heiton, 1861). The groups will allow analysis which is able to trace 'economic contours of society and social ranking' (Armstrong, 1972 p.191) as occupation both affords position within an economic production process (capitalist structure), and the level of social standing (place).[70] Occupation therefore allows the conceptual framework to underpin analysis as it links the capitalism / class structures with the concept of 'place'. An agent's place within the class structure is influenced by the capitalist production process. This 'place' is both positional, or social (that is, signifying class), and becomes spatial (that is, influencing residence through the 'sensing' of social place, the operations of the housing market and the mobility process).

Population density maps are used in conjunction with the maps of social status distribution. This is to recognise that both sets of data are deficient in some respect, but used together they will, at least, provide a more secure indication of spatial change. The population density and status distribution maps are able to be compared to note any relationship between social groups and high density levels. This in turn may prompt questions that can be addressed later in the thesis - for instance, further relationships between density and mobility, and the impact high density may have on class consciousness and residential decision making. Population density maps and analysis do present some problems and the scale chosen for study needs a brief explanation.

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[70] Armstrong (1966) believes a five-tier classification is the most efficient to study social status. His typology is based on the 1951 census, but there is some debate as to the applicability of using the 1951 census in nineteenth century work (Banks, 1977). But whereas Armstrong has two further gradations - partly skilled and unskilled - this thesis conflates these groups. This is in line with Royle's (1977) view that a semi-skilled class is hard to define in the nineteenth century in a pre-Fordist society. Royle (1977) argues that the semi-skilled worker category is not helpful when considering the nineteenth century, as he doubts if the category existed then. He feels that semi-skilled implies modern, assembly line, processes, after Ford, and it is doubtful if these existed in the last century: although this is criticised by Holmes and Armstrong (1978).

The population density levels of parishes of Edinburgh and the EDs of Perth are calculated based upon the population recorded in the census. Moreover, the size of Edinburgh, compared to Perth, make its ecclesiastical parishes more comparable with Perth's EDs. Population density is calculated per windowed room, rather than simply by area. This is a more accurate way of using density as a surrogate for social status or socio-space. When population density of an area is calculated, often large tracts of empty land disguise the true levels. Littlejohn (1866) was first to use population density per windowed room, and as the census provides details of the number of windowed rooms in each ED and ecclesiastical parish, it is an easy unit for which to compute density.[71] Furthermore, as a surrogate for socio-space and standard of life, windowed room density gives a good impression of levels of over-crowding. Gauldie (1974) and others indicate that a population density level of more than 2.5 persons per windowed room is 'over-crowded'. Comparisons are made within Edinburgh of different parishes and within Perth using EDs.

Furthermore, density is useful to the conceptual framework of the analysis. High density or low density give a 'feeling' to a particular area and will add to the sense of place or structured feeling of an agent. Low density increasingly became associated with the middle class (Gauldie, 1974), and was deliberately sought or manifested by certain urban gatekeepers or land-owners as an attraction to middle class house buyers or renters to their areas (see chapter five). Population density does provide a useful guide to area change and living standards, but it can be criticised for over-simplicity. The actual density figures per windowed room might be affected by the keeping of servants in a middle class household. Moreover, little can be done to correct against the familial trends over the period, as well as the changing birth and death rates. Furthermore, the size of rooms will also have a significant impact on whether somewhere was overcrowded. These factors need to be recognised in the analysis.

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[71] Population density per windowed room is also used by Gray (1973, 1976).

Following on from the initial analysis using the maps the more detailed analysis of socio-spatial change can be undertaken as described above. The sources used to calculate the indices are the from the census. The social status groups used have been constructed based on occupation of the head of household. The limitations of this in terms of data reliability have already been addressed, however, the effect of relying solely on heads of household data has thus far not been considered.

The reliance on information for heads of household is a major limitation of the thesis. The nature of the enquiry and the limits of time, means that householders alone must be used to represent their entire household. The effects are numerous. Women are almost completely overlooked. Their role as decision makers, their sense of place and the impact they had on their own and their family's status are largely ignored. This is an important omission. Furthermore, young men and women are also overlooked. This becomes important during the turnover stage of analysis. Studies have shown that this group will generally be more mobile (see Pooley and Turnbull, 1998). Consequently, the precise relationship between mobility and socio-spatial change will lack an important component. Two other groups are also omitted - lodgers and servants. The omission of these will affect more than turnover analysis. There will be inaccuracies in the density maps, class distribution maps, the indices and social status groups. With hindsight, lodgers and servants ought to have been included as separate entities. However, this would have been time-consuming and impractical, not least as servants and lodgers were not two homogenous groups. Thus, care is needed through this thesis in the interpretations of statistics and tables using heads of household. Generally, the discrepancies should not be large, but it is likely that the true extent of socio-spatial change is underplayed.

Chapter four will set out the nature of the socio-spatial impact of the industrialisation - the first part of the meso-scale empirical enquiry. The second part of the meso-scale enquiry extends the analysis to explain why socio-spatial change in the form of residential polarisation was the outcome.

The housing market, structured feeling and mobility are considered to be the three most significant factors affecting socio-spatial change: these are identified within the structuration grid introduced in chapter one. Housing is considered to be the largest component of the city (Short, 1996), and in the late nineteenth century was structured by capitalism. This 'structuring' is shown by considering housing in terms of the power relationship between agents over the resources and allocation of housing. This power relationship can be considered to be the economic and political interaction of the structuration grid.

The methods and sources used to examine the effects of the housing market on socio-space must lend themselves to three specific requirements. First, that they are suited to the meso-sale of enquiry, second that they fit within the conceptual framework of analysis, and third, that they are appropriate to socio-spatial study. The sources chosen for analysis fit these requirements. The two main sources are the Register of Sasines and newspapers (additionally valuation rolls and the Dean of Guild Minutes were also used). The Resister of Sasines is unique to Scotland. Since 1617, any transfers of ownership of heritable property in Scotland is recorder in the Register of Sasines (Sinclair, 1994). The system of land-holding in Scotland is feudal, by which all heritable property is held by the Crown, either directly or more commonly through a subject-superior. Grants and changes of ownership used to involve a series of documents, often including a charter by a feudal superior and an Instrument of Sasine. The Sasines are useful to explore the operations of feudal superiors, in this context urban gatekeepers who, owned or controlled land. New housing, for instance, would be built on feud land, and the feudal superior could wield considerable influence by laying down specific conditions within the feu charter. Chapter five details the way in which land-owners were able to specify what was built on their land, in terms of the quality and quantity of housing, as well as the price. This would have profound effects on the socio-space of a burgh by creating 'social areas' at the whim of empowered

individuals. This illustrates the way in which agents act using structures to affect socio-space (in this case a single agent, but it can be extended to solidaristic groups).

The Sasines are suited to meso-scale analysis because of the nature of the urban housing market: the records were not restricted to local areas but covered the entire city. Furthermore, in terms of structuration theory, the Sasines represent adequately the resources and governance of the housing market - and thus demonstrate the power relationship that existed. Finally, the ways in which urban-gatekeepers operated using feu-charters greatly affected socio-space - the price specification of dwelling units ultimately determined the social status of areas.

There are, however, several complications with the use of the Sasine records. The first is at the conceptual level. An apparent paradox surfaces as the Sasines epitomises a feudal housing market structure - yet it is central to the argument of this thesis that the housing market is capitalist in form. Although this is difficult to overcome at any theoretical level, in reality the feudal nature of the housing and land-markets were nominal. The ways in which urban gatekeepers, and builders in particular, behaved was highly capitalist, as the analysis of speculators in chapter four will show. Much housing built in Edinburgh (but also in Perth) was undertaken for quick gain - using the capitalist system and taking advantage of the booms and busts of a volatile economy. Chapter five uses the Sasines to highlight the vicissitudes of the Victorian housing market; how it was only in buoyant years that working class housing was built, because of the maximum returns to be made. The Sasines are thus a valuable tool to gain insight into economic conditions and the spatial factors of these conditions which resulted.

Other problems also arise with the Sasines. Although in terms of accuracy they cannot usually be doubted, they are notoriously difficult documents to read because of the cross-referencing that is required and the dating system they use. The Register is in chronological order, not by street or even enumeration district. Thus, the use of the

Sasines is highly time consuming. An address must be looked up in an index. This begs the question that the date of land-transfer is known, and this is not always the case. Once this is done, the serial number given in the index must be cross referenced with the Instrument of Sasine contained in huge volumes (known as Abridgements) in Register House, Edinburgh, and organised by county. The entry, although highly detailed, is written in pseudo-literary legalese with many abbreviated words and, especially with older records, in Latin. Finally, the indices which are used are by person and place - the person index is complete, but the place index is not. This makes tracing properties across time rather difficult. In this thesis, persons rather than places were used to examined the workings of the housing market for that reason - this also gives a further insight into the action of individual agents within the housing market structure.

The limitations of the Sasines in terms of the fact they are official documentation yielding little in the way of qualitative information means that newspapers are of more use to examine, say, the ways in which urban gatekeepers advertised their properties. Newspapers, however, are selective and designed for certain readerships. As such sections of the housing market may be ignored - for instance the poorest housing sector (Rodger, 1983). This is noted during the discussion.

Other sources which are employed to examine urban housing market include official data such as the Dean of Guild Minutes which is an early form of a planning permission authority and lists improvements, buildings and additions to property or land (Sinclair, 1994). This is a source of record and is generally regarded as accurate (Gordon, 1990). Its main limitation lies with the fact that it has limited use in a discussion of the housing market mechanism, but does provide insights into regulations and officialdom which would have had some impact on socio-space.

Chapter five attempts to show the link between the housing market and the 'structured feeling' of agents. One way of doing this is to consider the extent to which urban

gatekeepers created class consciousness or simply responded to it. The most obvious choice for assessing this is to find a diary or other written record. Such sources are very rare except amongst upper class individuals or people of prominence. To use what little personal sources there are available for Perth and Edinburgh would therefore give a partial account. Nevertheless, sources have been employed that provide instances of opinions of agents and key players within Edinburgh (and to a lesser extent Perth) which point to definite 'feelings' regarding both place and class. The two chief sources are the Report of the Royal Commission on the Housing of the Working Classes (1885) and Littlejohn's Sanitary Report (1866). The former is of more use since it takes oral evidence from key players within Edinburgh.

The main limitation with the Report is simply the level of selectivity that may be involved. Three questions arise: who chose the witnesses? Why were those particular witnesses chosen? Thus, was the report selective? Even if it assumed there is a degree of official selectivity, the responses given by the witnesses are revealing regarding the housing market, their own position therein and their view of others within Edinburgh. The Report focuses on Edinburgh which means Perth is overlooked, but the source does present a very useful guide to the meso-scale analysis of the city. The Report also lends itself to the idea of an 'imagined' city. Much of the recent literature in geography is concerned with sense of place and imagined communities. As such, in chapter two, it was suggested that it has a tendency to be agent centred. The way in which the Report took evidence, however, links well with much of this literature. The extensive evidence given by city worthies, as well as ordinary Edinburgh burgesses, paints different pictures of the city. It is revealing how some witnesses view the Old Town of Edinburgh when it is clear by their description they never visited it. Thus, the Old Town and the working class areas may be considered 'imagined'. The sense of place (or places) within Edinburgh reveals many different views of the city - is it the job of the researcher to try to discover which is the real view? But they are all real. This problem highlights the need to step back from the individualistic interpretations of socio-space, useful though these are at illuminating the city. Analysis needs to be at a

scale which adequate reflects all these views and hence why the meso-scale is emphasised in this thesis to bring together the many pieces of the urban jigsaw revealing the socio-spatial picture. In a postmodern world the views of all are relevant, but to make any sense of them, they must be considered within the context of socio-economic structures. Agents 'place' themselves (or give legitimation as Gidden's puts it) within structures of signification (class) and domination (capitalism). Thus, the agent is an agent within a class structure; and the class structure is inseparably related to the place of that individual in society and the capitalist market structure. In other words, class exists because agents enables it to do so.

Littlejohn's Sanitary Report of 1866 continues this theme.[72] The report is descriptive of places rather than people but it acts in two ways to be of use to the structure / agency argument. First, it describes in depth the various parts of Edinburgh, the condition the burgh was in and the remedies which were necessary. As such, it suggests the sense of place that may be felt by different groups - the sense of place which influences the residential decision making made within the housing market. Second, it marks the contrast that existed between the various peoples of Edinburgh and as such highlights the power relationships in terms of choice, for instance, the inevitability of the situation the poor find themselves and their lack of power to do anything about it. The discussion of factors of change within the city is brought to a conclusion by assessing the role of consumerism to generate class differences and the ways in which political and institutional factors affected socio-spatial change. The former is examined using newspaper advertisements and contemporary reports; the latter using the numerous official documentation such as Littlejohn (1866).

The meso-scale analysis will enable the understanding of the spatial impacts of the industrial revolution to be advanced; in particular the ways in which the spatial changes were manifested within Edinburgh and Perth can be outlined. The first part of

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[72] Littlejohn's Report was a sanitary and medical inspection of the city of Edinburgh and as such is selective in what it is describing. It was the views and findings of one doctor, so the degree of representativeness must be questioned especially as Littlejohn had a vested interest in cleaning up the city. It is valuable in the insights it does give of Edinburgh.

chapter five completes the meso-scale analysis by examining in detail the factors of change within Edinburgh and Perth. However, these factors are generally more structural in form; that is the housing market, class consciousness, and industrialisation are considered. Thus, the meso-scale limits discussion. Its limitation lies in the fact that the scale in unsuited to the details of individual agents who live their lives at a more local scale; by this it is meant, individual decision making occurs and affects small areas. (Collectively or solidaristically, of course, agents decision making does affect meso-scale space.) Thus, it is important to move from the meso-scale to the more detailed micro-scale analysis. There are two further reasons for doing this. First, to assess how the meso-scale factors effect the micro-scale in terms of change (for instance, how the housing market was influencing spatial change in a particular ED). Second, by examining the micro-area in terms of meso-scale influences and structural factors driving change, a context is provided for agency decision making and factors of change (both generally micro-scale) which are examined in greater detail in chapter six.

3.4 SOCIO-SPATIAL ANALYSIS AT THE MICRO-SCALE

The factors of socio-spatial change within Edinburgh and Perth provide an insight into the dynamics and rationale for change as they identify the ways in which structures and agents interacted at the meso-scale and the impact this had on specific micro-areas. They also go some way to explain the changing socio-spatial pattern that the social status and density maps indicate and the heightened segregation that the indices demonstrate. In order to carry out a micro-scale study, EDs need to be selected from Edinburgh and Perth. Seven are chosen in Edinburgh and six in Perth. The EDs selected were based upon the perceived areas of Edinburgh during the late nineteenth century - in particular those evident in contemporary writings such as in newspapers and in Oliver and Boyd (1860), Heiton (1861) and Littlejohn (1866).[73] Oliver and

[73] See also the work of Gordon (1979, 1983); and Gray (1973, 1976); but also Moncrieff, (1943); Bell, (1973); Daiches, (1978); and Massie, (1994), for example. The newspapers consulted include The Courant and the Edinburgh Property Review. It can be conjectured that the perception of different areas within Edinburgh was heightened by the development of Edinburgh's New Town, the first gentrification

Boyd and Littlejohn refer specifically to the numerous 'districts' within Edinburgh, the latter calculating vital statistics for areas such as 'Fountainbridge', 'New Town', and 'the Grange'. Consequently, it seemed appropriate to select seven such areas perceived at the time as distinctive. An ED was therefore selected from Old Town, New Town, inner and outer suburbs, industrial Edinburgh and an area of new housing. Areas corresponding to these were also chosen in Perth. Whereas these cannot be considered to give a complete representation of Edinburgh and Perth, they are typical of the burghs.

The micro-areas are analysed in three different, but related ways. First, and in order to link the micro-areas of the burgh to the meso-scale picture, the chi-square statistic is employed. Chi-square analysis provides, in the one measure, two levels of scale, and unlike some of the conceptual indices described above, takes into account city wide population and composition of all social groups. Therefore, any change within the micro-area to the social composition must, perforce, always be viewed with respect to the town's social composition and the changes thereto. As such, chi-square provides a useful indicator of change in the social morphology of the city and micro-areas. The observed and expected number of each social group for each ED is calculated and the deviance between these two figures is expressed in terms of under- or over-representation of a particular social group with respect to the whole city. Thus, an ED may have an over-representation of skilled manual households by twenty percent, because the observed (actual) number of households is twenty percent greater than the chi-square statistic expected. Chi-square has numerous limitations in its use which are particularly concerned with small data sets and reliability - only when computations are made for the upper non-manual social group in certain EDs will this cause some concern. The analysis and interpretation of the statistics will be made with this in mind.

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programme in Scotland, and the first deliberate policy of socio-residential segregation (Borsay, 1990). But even here, service streets, with less grand housing, were required to cater for the domestic needs of the well-to-do. Given the importance and prevalence of such streets, and the fact that they do not conform to the New Town, they can themselves be taken as a distinct area.

Representativeness thus provides the first indication that specific EDs were becoming polarised. The next stage of analysis uses this and knowledge of the meso-scale factors driving change to examine the ways in which the micro-areas changed. Using sources ranging from Post Office directories to the Register of Sasines, a picture is formed of the structural and physical changes to the ED. The ways in which industrialisation, the housing market and class consciousness influenced changes in the micro-area are noted. For instance, the building of new working class houses in an ED or a new road. The aim of this analysis is to assess the ways in which an ED was changing and relating this to the meso-scale factors of change. This necessarily concentrates on the structural factors driving change such as class, and as such, tends to over look the agency factors. The reason for this is straightforward. Agency action is generally micro-sale in scope, inasmuch as individual agent's sphere of influence is generally restricted to small areas. The spatial effects on an agent is therefore discernible only at the micro-scale.[74] This detailed analysis is carried out in chapter six. Nevertheless, as it is recognised that agency activity does affect space, a third strand of analysis is carried out at the micro-level using the contributor statistic.

The contributor statistic is based on the index of interaction and provides an indication of an ED's contribution to the overall interaction index for the city. Because any change in the contributions of individual EDs to the overall index points to socio-spatial change, Edinburgh can be analysed at the micro-level despite the absence of a calculated city-wide residential differentiation indices. The index for Edinburgh as a whole is not required in order to calculate the contribution each individual ED makes to it. Given that total numbers of each social status group have been calculated for Edinburgh, the percentage of a particular group within an individual ED can be derived, and a 'contributory figure' calculated.[75]

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[74] Although some agents, such as urban gatekeepers and feudal superior, clearly had a meso-scale influence: their decisions and actions shaped the city at the meso-scale and the micro-scale.

[75] Although it cannot be concluded from this analysis how much an individual ED reflects what is going on in Edinburgh as a whole, the point of the calculation, and subsequent comparison over time, is to allow micro-level socio-spatial change to be gauged. Given that there are over fifteen hundred EDs the 'contributor' for each is very small indeed, but it is the change that is of interest not the absolute number. Thus, the index has been multiplied by an hundred in order to allow greater clarity.

When the contributor changes it means one or more of the variables used to calculate the statistic is changing. This means that the proportion of a social group within the ED is changing with respect to the other groups in that ED, and/or that the proportion of a social group within one ED as a percentage of the city wide total is changing. Thus, the contributor focuses on a social group within an ED in terms of what is happening to that, and only that, social group throughout the city. The importance of this lies in the fact that any change in the contributor must be indicative of social change of some sort whether it be at the ED or burgh level. A burgh wide increase in a social group, but a static position within an ED means that the social group is moving to other parts of the city.

The contribution to the interaction index (rather than the other indices) is analysed as the interaction index takes into consideration the social composition of both the city and each ED and is less dependent upon population distribution than the others.

The contributor's main drawback, however, lies in the fact it is difficult to interpret, and also that the micro-units used in analyse (EDs) may over- or under-state the true extent of change if they cut across 'natural' areas of social group concentration. This is a similar limitation to that of the evenness indices. Furthermore, the contributor cannot be used in the same way for Edinburgh as it can for Perth. The smaller burgh has the added advantage that the contributors within its EDs can be analysed in the light of the known burgh interaction index. The ways in which the ED reflects the burgh can thus be gauged. This neatly brings the analysis back full circle. The chapter begins by examining meso-scale influences on micro-areas and ends by assessing the ways micro-areas reflect meso-scale indices.

The three approaches to the micro-scale analysis provide the context within which agency factors of change operate. This should indicate the ways in which structures and agents were interacting, facilitating socio-spatial polarisation. The context of

agency driven factors having been provided, the next and final stage is to consider the ways in which agents drove spatial change.

3.5 MOBILITY AND SOCIO-SPATIAL CHANGE AT THE MICRO-SCALE

The meso-scale analysis leads into the empirical analysis of the chapter which assesses how agency factors of change relate to city-wide socio-spatial change. This recognises that a single agent has very limited scope in influencing socio-spatial change, and hence why agents must be considered together or solidaristically. Thus, agency factors of change within micro-areas are understood in terms of the overall meso-scale change.

There are a number of different ways in which mobility can be studied all of which have difficulties attached (Pooley and Turnbull, 1998). However, most of these can be rejected in the present study simply because the mobility analysis which is required is at the micro-scale. Lawton and Pooley (1978 p.77) have identified two approaches to study micro-scale residential mobility. Of these, one is directly concerned with the impact on the social areas of the town 'measuring persistence or turnover within a given area by comparing population listings at two dates', the other is an individual study of movements linking frequency and distance moved to a number of different socio-economic criteria. Of these, the latter is beyond the scope of research here which is principally concerned with social area change. However, that does not mean a total rejection of analysis of individual movements and links to, say, age and housing tenure, because individual moves provide an insight into the ways agents dealt with residential decision making, and thereby illustrating an aspect of structure / agency interaction. But of the two broad approaches identified by Lawton and Pooley, measuring residential turnover is the most suited to a socio-spatial study. The sources used for turnover analysis, however, present a number of further problems.

The main sources consulted for turnover analysis are the census, rateable valuation rolls, and Post Office Directories. Some initial points need to be made here about their choice and usage. The census suffers for being decennial. Few residents in Victorian Britain would have remained in the same address for a ten year interval or longer.[76] Thus, the census is limited in its use for turnover analysis. Nevertheless, the census can be used to identify in-migrants to specific areas. The use of place of birth data is important here. Although, as Lawton and Pooley (1978) point out, there are several problems in using published birthplace tabulations.[77] A further use of the census is to allow the identification of differentials in population movement with respect to sex, age and life cycle (Lawton and Pooley, 1978): some analysis is discussed in chapter five concerning age profile data in order to assess, as far as possible, whether the changing age profile of an area affected socio-space.

Post Office directories provide an almost blanket coverage of middle class residents and tradesmen, but these represent only part of the burgh's population - the working class is almost totally excluded, for instance. Nevertheless, the directories have been employed to trace individuals in order to illustrate the ways in which agents made residential decisions. The typicality of these individuals can obviously be questioned - it is not claimed to be a representative sample, but an indication of agent decision making may be gauged from this.[78]

The use of electoral rolls has been rejected for this thesis on the grounds that they provide a very limited source for analysing either socio-spatial change or for ascertaining levels of intra-urban migration. Even the extension to the franchise in

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[76] Lawton and Pooley (1978) suggest 40%.

[77] These are noted to be: first that they reflect a lifetime migration only, and not the time or place of people's previous movement. Secondly, migration differentials cannot effectively be assessed. Birthplace data have no cross-tabulation other than inconsistent disaggregation by age and sex. Thirdly, neither the areal basis of enumeration nor of birthplace is consistent from one census to the next.

[78] Individuals are difficult to trace, especially if the census alone is used. Chapter six provides a brief critique of record linkage, but suffice it to say here, individuals with unusual names or occupations are often easily traced. Moreover, there is a bias towards middle class agents as they are the most likely to be recorded in Post Office directories - the source selected for tracing individuals as it was produced annually.

1867 allowed fewer than half of Edinburgh's male population the vote (Elliott, McCrone and Skelton, 1978). Similar limitations are likely to exist for Perth.

Valuation Rolls which were used by the civic authorities for levying rates were produced annually and provide a complete list of owners, tenants and occupiers of properties. They do, however, only record heads of household. This might be considered inadequate, as it tends to ignore women and their role in residential decision making, as well as children who may not have shared the occupation (and so social status) of their parents. However, it is mainly the valuation rolls which are used and heads of households are selected for the turnover analysis. Whereas Lawton and Pooley (1978) correctly identify the limitations of English valuation rolls, the Scottish rolls are much more useful, as they were produced yearly and provide reasonably reliable information on occupation. Therefore, it is easier to note turnover and persistence levels. Indeed it is in this vein that they are employed to show that intra-urban migration was an influential factor in the process of socio-spatial change. The rolls list each owner, tenant and occupier - sometimes the same person in all cases - of each property valued at over four pounds a year.[79] As well as this, the occupations of each listed individual are specified, although the degree of accuracy is lower here than in the census, and changes in occupation are sometimes overlooked. A significant drawback lies in their utilisation: they have yet to be put on microfilm and are cumbersome and time-consuming to use and often difficult to read.

The six or seven enumeration districts selected for Perth and Edinburgh are subjected to turnover analysis. To calculate the level of turnover, a listing in year one was compared with year two. The number of changes was noted and this was calculated in percentage terms. Thus, if five changes out of fifty were noted, this represents a turnover of property of ten percent. This however, does not take into consideration the effects of death and the age-profile of the ED. Some attention is made to these in chapter six. The percentage turnover in each ED for the years 1855 to 1895 are

[79] Although all property is listed, those valued under four pounds have no details attached. This presents a serious limitation when considering a poor or slum area such as the Old Town in Edinburgh.

graphed. The important factor that is of concern is the effects this turnover had on socio-space. Thus, each graph shows the fluctuation of each socio-status group in each ED over time. It is then easy to note the levels of high or low turnover, as well as net in- or out- migration and the effect this would have on socio-space.

As well as problems using sources for turnover analysis, the system of record linkage is not without its difficulties. Naturally, the source used for recording linkage is the principal concern. Thus, care is needed in the selection. In this thesis the valuation rolls do provide the most accurate and useful data source for record linkage but, even with these inaccuracies, illegibility and missing information means analysis becomes hazardous. The record linkage undertaking moves forward in time which looses the advantage that tracing backwards has in that none of the sample is lost through death. However, the former approach is adopted because of cross-referencing with other sources, including the census as well as for convenience and consistency.

Turnover analysis is done at the street level rather than consider householder turnover. There are a number of reasons for this. First, there is limited scope of what household turnover could reveal about socio-spatial change of an area. It may provide further insight in to links between class, age and mobility, but this is not a central strand of enquiry and agency action. Furthermore, the choice of which households to elected is difficult and obtaining a representative sample is difficult. Moreover, whether a house saw five or nine residents over the course of twenty years is less important in this thesis than the effects that population turnover had on the socio-space of the micro-area. Finally, turnover at the house level is time-consuming and it was felt that time could be put to better use. This is not to negate the role of house turnover, its importance in revealing socio-economic trends is highly insightful, simply outwith the direct scope of the thesis.

The problem of representativeness does surface with turnover analysis. Only a small percentage of Edinburgh and Perth was considered. Is this adequate? Was this small

sample representative of all of Edinburgh, for instance? The selection of areas was carried out with care and with respect to the sensibilities of the perceptions of nineteenth century Edinburgh and Perth residents. But here a second problem arises - whose perceptions precisely? Were they the kind of perceptions that are revealed in the Report to the Royal Commission - imagined places? or are they the perceptions of officialdom, simply neat statistical areas created by the Registrar General? These factors are considered in the analysis, but as far as it has been possible, the perceptions have been taken from unbiased sources (insofar as these exist) in the form of guide books, medical reports and journals.

Turnover analysis can reveal little about why people moved, but the trends noted amongst the socio-status groups will provide some evidence to suggest that structure / agency interaction is involved in terms of a growth in class consciousness and the operation of the housing market. For this reason attention again focuses on the agency factors of change in the light of meso-scale socio-spatial change. A few individual examples of moves by agents are highlighted to illustrate the nature of structure / agency interaction. This sheds some light on how agent's made decisions, although the examples used cannot claim to be representative and are presented solely to provided instances of actual decision making processes and thereby clarify the structure / agency interaction process.

There were many variables controlling the extent and level of intra-urban migration in late nineteenth century Edinburgh and Perth. Chapter four identifies spatial and socio-spatial change in Edinburgh and Perth and identifies the form this took. Chapter five extends this to examine the structure and agency interaction influences on micro-units. Chapter six fits with the previous chapters in several ways, demonstrating the link between agency and socio-space. More than this, chapter six will show that it is was in the small arenas of interaction, which Giddens labelled locales, that residential decisions were made within underlying structures which permeated every level of society.

3.6 CONCLUSION

This chapter has introduced the sources used in this thesis and outlined the methods employed in their analysis. It is recognised that the two are inter-related and that their use is limited by time constraints. But it should also be stressed how important it is that the sources and methods used in analysis are not only suitable to the questions asked but also to the conceptual framework adopted. There will always be problems and potentialities with sources and limitations with the methods of enquiry. These have been identified in this chapter, but will be fully realised and expanded upon during the empirical chapters when the interpretation of the data and sources is made in the light of inevitable shortcomings.

The most significant of the limitations identified in this chapter concerns the concentration on heads of household rather than individuals. There are sound reasons that can be put forward for using heads of household which include the prominence of the position in Victorian Britain, the limits of time in this thesis and the fact that much of the data from the census summary tables relate only to include heads of households. However, realistically, the use of a minority group to represent everyone can be considered partial and exclusive. Large sections of society are excluded including most women and young persons, but also lodgers and servants. Young persons especially would have had a considerable impact on mobility levels. The implications of this limitation mean not only that the head of household must 'represent' his or her family in terms of social status and mobility, but analytically that social status groups may be inaccurately delimited and that turnover rates may be slightly under-stated. The overall effects of this is likely, if anything, to underplay the true extent of socio-spatial change within Edinburgh and Perth. This limitation runs through the thesis and must be considered when interpreting statistical data. Nevertheless, it is a limitation that previous research has faced and one which, as yet, remains to be fully overcome.

Over the years there have been many and varied approaches and sources used to measure virtually every aspect of urban space. The diversity and 'intellectual eclecticism' must be considered to be encouraging. The same diversity can be taken as an indication that urban study has failed to find a unity Carter and Lewis (1990), but for the moment, diversity should be celebrated, since it suggests innovation and inter-disciplinary study. Further, the considerable sources and methods which are now used in urban studies surely must mean that the city is receiving the attention it deserves. After all, the city is the loci for dynamism and change and has been since classical times. Therefore it is the role of the geographer to seek to extend urban enquiry by prompting further research questions and searching for new sources and methods.

The use of insights from structuration theory, the three scales of enquiry and the equal attention that is given to structures and agents will provide an examination of urban socio-space which, for the first time perhaps, recognises the dual importance of both structures and agents in socio-spatial change in the nineteenth century city and recognise the importance of the inter-relationship of each scale of analysis. In this respect, urban geographical enquiry is extended, but also, it is hoped that further research questions and discussion are generated.

CHAPTER FOUR

INDUSTRIALISATION, ECONOMIC CHANGE AND SOCIO-SPATIAL STRUCTURE

4.1 INTRODUCTION

The next three chapters of this thesis contain the empirical analysis of the research. The aim of these chapters is to advance the understanding of the spatial impacts of industrialisation by viewing them as the outcome of the reflexive relationship between the socio-economic structures and the actions of human agents. The analysis draws on insights from Structuration Theory and uses the settlements of Edinburgh and Perth as case studies. In this chapter the structural changes to the economy are considered at the macro-scale and the spatial effects are outlined. In the course of the discussion an urban hierarchy of settlements of Scotland is constructed to help identify the changing settlement pattern of the most important burghs. Once the main factors of change have been identified, their impact on individual burghs is assessed using a number of variables taken mainly from the census. Edinburgh and Perth are singled out from amongst the other burghs for a more detailed examination of meso-scale change.

The question which frames the discussion of this chapter is: despite lacking large scale industrialisation, did Edinburgh and Perth experience far-reaching changes to their socio-space? This question implies that urban socio-spatial change during the late-nineteenth century might be influenced by more than industrialisation processes. In fact, it is suggested that structure / agency interaction was the primary influence. To this end, the study considers population growth, economic sector change and levels of in-migration - all indicative, to some degree, of structure / agency interaction.

Once the factors of change within the city have been broadly identified, the chapter then turns to assess the spatial impact within Edinburgh and Perth. To do this, maps

are produced showing population density and social status distribution within the two towns. These two criteria are useful to provide a broad overview of spatial change. Moreover, population density change is a useful surrogate for suggesting mobility and standard of living, as well as providing a clue to the process of change within the burgh. Likewise, social status distribution maps, when used with the population density maps, calcifies the dynamic processes in terms of identifying areas of industrial expansion and suburbanisation. This in itself adumbrates a socio-spatial differentiation.

The question therefore arises, was society becoming more polarised spatially? The maps cannot adequately answer this and so a more detailed method is required to identify polarisation. Before this is done, the difficulties of a term such as 'polarisation' are explored. In particular, this leads to the selection of two 'dimensions' used in the analysis of socio-spatial polarisation, namely, residential evenness and residential exposure. Correctly, these are dimensions of residential segregation, but the subtle difference between this and polarisation is academic. Indices are used which attempt to assess the extent of residential segregation in terms of 'departures from evenness' and 'residential exposure'.[80]

By the end of the chapter the first stage of the empirical enquiry should have established the spatial impacts that macro-level changes had on Edinburgh and Perth. Furthermore, from the analysis carried out, the process and dynamics at work within the burghs and the rationale for change can be postulated, before the more detailed survey of socio-spatial change within Edinburgh and Perth is undertaken in chapter five. To introduce the empirical analysis, a brief discussion of the economic changes and urban development in Scotland is first made. This provides an historical context for the study and is useful for assessing the levels of change that took place over the period 1851 to 1891 - a period of economic consolidation and social change.

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[80] These terms are fully explained in section 4.3.

4.2 ECONOMIC CHANGE AND URBAN DEVELOPMENT IN SCOTLAND

The pre-industrial urban network of Scotland was based on the mediaeval burghal system put into place by King David the First in the thirteenth century (Fox, 1983). The effects of rapid growth in industrial activity, accompanied by urban expansion in the nineteenth century, meant this centuries old urban system changed, and the once dominant county and market centres were superseded by the *arriviste* industrial towns. The industrial revolution in Scotland 'began' around 1780 with the appearance of cotton mills in Midlothian and Rothesay (Checklands, 1984).[81] Perthshire became an initial centre of industrialisation at centres such as Newtyle and Stanley, which led the way in new technology (Shaw, 1983). It was textiles, more than any other single industry, that initiated Scotland's industrial development. Textiles alone were responsible for the growth of many towns especially those in the west, but also notably Dundee.[82] The cloth trade had always played a major part in the Scottish economy, but the move from domestic textile production must be viewed as the clear instigation of an industrial society (Butt, 1977). This switch hastened Scottish economic development which was not only sustained during the late eighteenth and nineteenth centuries, but grew at an unprecedented rate. The result was a radical alteration in Scottish society creating a new social order and socio-space (Dickson, 1980).

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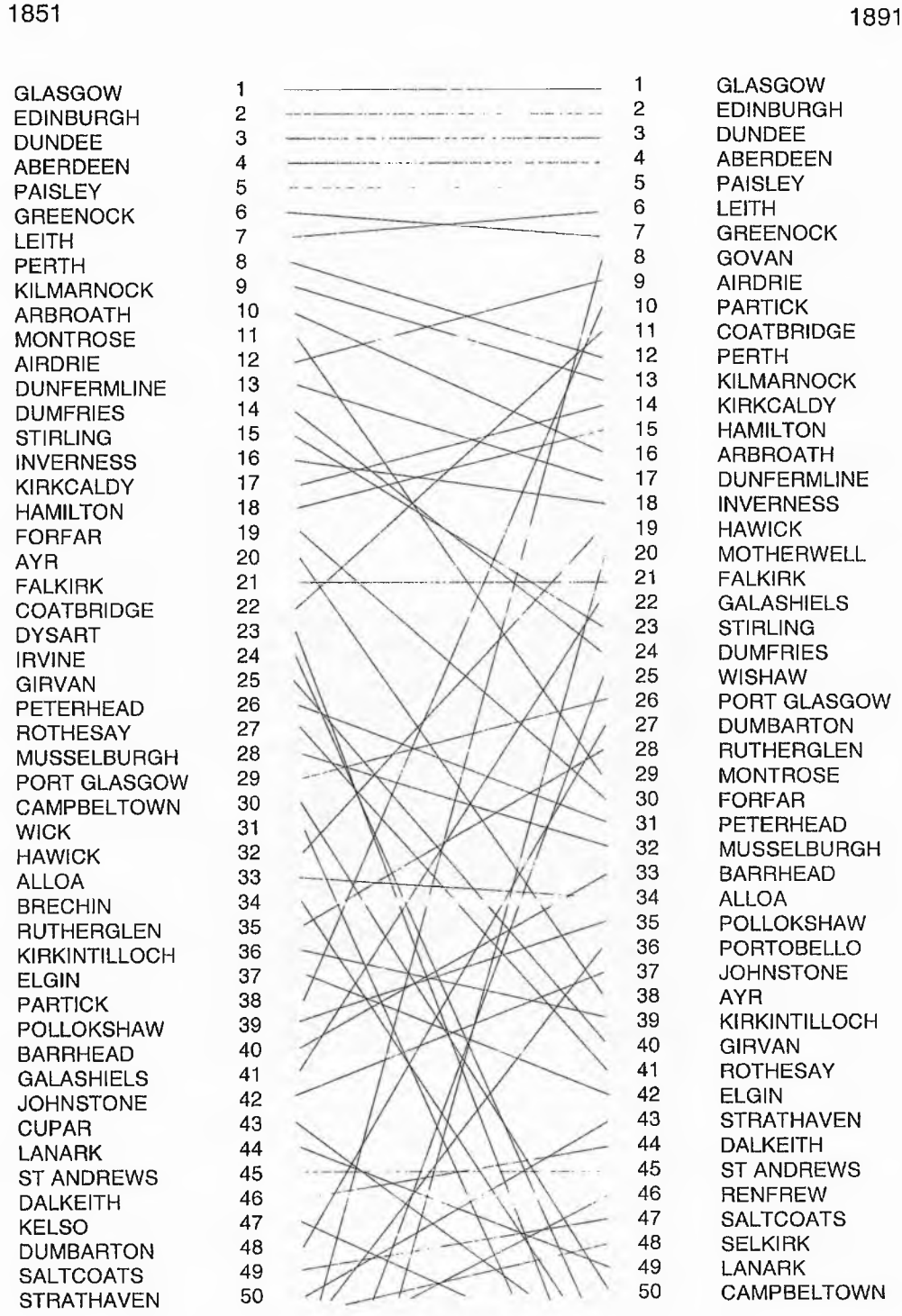
[81] There had been cotton production in Scotland previous to this, but the new mills marked a turning point in its production. As with the experience in Lancashire, cotton production first took place in the countryside, where nearly all industry was carried out, but with the growth and prosperity of the trade the industrial expansion which followed needed more than the countryside could offer. Either there was wholesale movement of the industry townwards or else small rural centres grew rapidly as cotton production and trade expanded (Whatley, 1997).

[82] Dundee had been a significant textile centre from the early mediaeval period, but growth was slow until the onset of industrial processes (Hamilton, 1932).

FIGURE 4.1: THE CHANGE TO THE SCOTTISH URBAN HIERARCHY 1851 - 1891



SOURCE: CENSUS OF SCOTLAND, 1851 AND 1891. (Parliamentary and Police Burgh boundaries used.)

At the societal level the most significant effect of industrialisation was the change of lifestyle for most Scots. Many people experienced a shift from a rural, subsistence way of life to urban living. Moreover, the nature of human relationships altered fundamentally in conjunction with the new urban lifestyles (Checklands, 1984). The industrial revolution in Scotland brought the emergence of an entirely new class - the capitalists. It was this new 'middle' class that increasingly dominated life (Crossick, 1977). They controlled the means of production and were the providers of work. Furthermore, they were advancing their political power both locally and nationally as the upper classes were yielding their once jealously guarded position, as governors and legislators, to the new capitalists.[83]

To be sure, the rapid industrialisation of Scotland in the early nineteenth century had a profound effect on its population and towns. Whereas many established centres grew, often exponentially, by the decade, many other settlements were established directly as a consequence of industrial activity. Planned towns such as Lawrencekirk and Ferryden, or model fishing ports like Thurso or Ullapool, appeared throughout Scotland and altered its urban structure (Adams, 1978). Figure 4.1 shows Scotland's urban structure in the form of an hierarchy in 1851. It was the position that had been reached after many years of industrial growth and considerable urban expansion.

In the period 1851-1891, the position of burghs in Scotland's urban hierarchy altered, reflecting the changing nature and location of industry. Figure 4.1[84] illustrates the changes that took place in the Scottish hierarchy during this period. As evident from the column of towns on the left, in 1851 the hierarchy was dominated by the 'four cities', followed by second tier burghs, including many traditional centres such as Perth, Arbroath, Montrose and Dumfries.[85] By 1891 the picture was different as the

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[83] For instance, Sir William Chambers, the Lord Provost of Edinburgh from 1865, was essentially a man of commerce not breeding (Massie, 1994).

[84] This is largely based on a similar diagram by Ball (1996).

[85] Of the highest ranked urban settlements in 1851, twelve, including Glasgow and Edinburgh, were historic centres. There are two possible explanations for this. First, Ingram (1992) has suggested that regional centres in Scotland had greater importance than their equivalents in England because Edinburgh was relatively less dominant than London. Second, through the Conzenian notion of historic function, any urban growth that results from industrialisation will inevitably begin with existing urban

dramatic lines in the centre of the diagram testify. The five dominant burghs of 1851 still dominated in 1891 and their relative positions remained unaltered. Indeed, the seven largest settlements in Scotland remained in the same relative position throughout the late nineteenth century, apart from a switch in positions of Leith and Greenock, the *entrepôts* for Edinburgh and Glasgow respectively. However, few of the traditional centres appear in the top twenty. Perth and Arbroath do so, but both lost rank despite growing in population in absolute terms. Their respective growths did not match the phenomenal growth rate of the western industrial burghs of Partick, Airdrie, Hamilton, Govan and Motherwell. The reasons for this are considered in the following section where it is argued that the changing position of a burgh in the hierarchy was dependent on the levels of industrial activity, urban expansion and the rate of population growth. The aim of this brief analysis is to highlight the structural changes and agency response at the macro-level.

However, the analysis which follows makes the assumption that population is the determinant of burghal importance, and even if this is accepted, the census definition of urban population has varied over time. Burgh boundaries in Scotland had at least three delineations, and consequently three different population measurements resulted. In a period of considerable urban sprawl and suburbanisation, difficulties in assessing where a burgh ends and another begins is difficult. Thus, parliamentary burgh boundaries are used throughout this chapter as they, more than the others, took account of urbanisation and altered accordingly.[86]

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settlements. Thus, primary urban growth is experienced in the 'four cities' but also in all the historic urban centres, such as Perth, Dumfries, Ayr, Arbroath and Stirling - even to the extent that by 1851 these settlements were still dominant. Continued growth in these historic centres would have been checked by fixation lines and burgh location, for instance burgh walls, castles and abbeys (Conzen, 1960). Other ancient burghs had topographical obstacles to overcome - Edinburgh, Stirling and Aberdeen for example. New burghs had fewer obstacles to overcome as their position had been identified for their locational efficiency, for instance, Motherwell.

[86] Where other burgh boundaries (police burgh and municipal burgh) have been used, it is indicated.

4.3 SPATIAL PROCESSES AT THE NATIONAL LEVEL

In this section the new capitalist structure is considered in relation to the changing national settlement pattern. Industrial burghs became more important as agents responded to capitalism by moving to centres of industry. Consequently, industrial burghs grew in population and began to dominate the urban hierarchy. Data presented reveal, however, that Edinburgh and Perth did not become big industrial centres. The urban hierarchy (figure 4.1) shows the burghs of Scotland in terms of their relative population rank. In order to establish that change was occurring, and to be more precise about what form this change took, it is important to view the urban hierarchy in conjunction with maps and population, economic sector and place of birth data. This will suggest relationships between industrialisation, urban growth socio-economic structures and agency activity.

The onset and development of industrial capitalism was a major structural change to which agents responded and which influenced their action. Capitalists established factories and workshops: new houses were built for the workforce in response to rapid industrial developments within most burghs. Many people were attracted to the emerging industrial centres and, as such, made decisions to migrate. This amplified urban growth, and the new industrial centres became increasingly dominant in the Scottish economy. Their position in the hierarchy rose, eclipsing older, more established settlements. By 1850, the Scottish urban hierarchy was no longer based on burghal importance as a market centre on the mediaeval principle of central place. Instead, it became a hierarchy of the importance of the burgh's contribution (in terms of population) to Scotland's industrial development, the crucial factor in the nineteenth century.

Table 4.1 below shows population growth in selected burghs over the nineteenth century. The burghs with the highest population increase over the period 1791 to 1891 were Airdrie, Coatbridge, Hawick, Motherwell and Kirkcaldy. Generally, western

burghs had the fastest population growth rates. Other burghs such as Arbroath, Stirling and Inverness all had impressive population growth over the century, but could not keep pace with western counterparts. Western Glasgow outpaced eastern Edinburgh in terms of population growth. Perth had low growth throughout the hundred year period and lost rank. Indeed, if it were not for the fact that the population of Perth was over twenty thousand at the beginning of the nineteenth century, it would probably not have been in the top thirty settlements by 1891. The shift from the eastern to western bias of the most important settlements in Scotland is illustrated in the maps presented in figures 4.2 to 4.4. These show that, by 1891, there was a large cluster of burghs in the western lowlands which dominated the urban network.

Table 4.1 Percentage population change in selected burghs 1791 - 1891:

SETTLEMENT	% Pop growth 1791-1851	% Pop growth 1851-1871	% Pop growth 1871-1891	% Pop growth 1791-1891
GLASGOW	408%	50.0%	20.9%	791%
EDINBURGH	135	22.8	32.7	284
DUNDEE	251	50.7	28.9	581
ABERDEEN	259	22.4	25.0	449
PAISLEY	141	60.0	37.7	234
GREENOCK	145	55.8	10.4	321
LEITH	133.5	43.2	47.3	392
PERTH	22	7.3	16.7	53
DUMFRIES	90.7	17.2	8.0	142
KILMARNOCK	239	20.0	23.9	402
AYR	64	-9.2	14.9	71
MONTROSE	193	-4.5	-11.4	148
DUNFERMLINE	166	8.1	48.1	327
ARBROATH	228	17.6	15.1	343
INVERNESS	150	13.1	32.8	276
STIRLING	157	11.2	18.9	239
CAMPBELLTOWN	37.5	-3.7	-17.3	9.5
KIRKCALDY	350	18.6	118.6	536
DALKEITH	24	17.5	16.3	70
PORT GLASGOW	73	41.0	48.5	262
GOVAN	161	512	220	5014
HAMILTON	168	19.4	116	590
HAWICK	188	69.9	69.1	727
AIRDRIE	722	13.8	82.3	315
MOTHERWELL	na	616.0	226.0	276

Sources:The First Statistical Account 1791: Census, 1851, 1871,1891: Parliamentary Papers. I.U.P.

Figure 4.2: The Top Twenty Settlements in the Scottish Urban Hierarchy 1791

Figure 4.3: The Top Twenty Settlements in the Scottish Urban Hierarchy 1851

Figure 4.4: The Top Twenty Settlements in the Scottish Urban Hierarchy 1891

In the first half of the nineteenth century population growth rates were phenomenal in all but a few settlements, reflecting the emergence of industrialisation and urban growth. It is likely that in-migration played the largest part in population increase during this period. Of the settlements with limited population increase, Perth stands out as experiencing the lowest population increase of all the burghs in the table, and this is in spite of the fact that the burgh is on the Highland fringe and so ripe for migrant Highlanders (Withers, 1986). However, the low growth here, as in places such as Ayr and Dalkeith, suggest high levels of out-migrants from these burghs to larger cities - Dundee and Edinburgh in the case of Perth and Dalkeith; Glasgow and Paisley in the case of Ayr. Perth's population was checked by the very nature of its function: it was an administrative and agricultural centre with little industry and migrants were not pulled to it. [87]

The tables below show the levels of industry in selected burghs.[88] The burghs rising in the hierarchy, such as Govan and Airdrie, had a much greater industrial sector than the eastern burghs, such as Perth and Stirling. The economic sector data are based upon the census summary tables for occupation. These record all adult population employed and classify the various occupations to an appropriate sector. Some care is needed with their interpretation. Not all occupations comfortably fit in a particular sector, and status variation within occupations is overlooked in the census summaries. But the data can be used as broad guides to the economic composition of a burgh as well as revealing some of the impact structural change had on burghs. [89]

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[87] The burghs which served large rural areas as market and administrative centres declined in status during the second half of the nineteenth century, not because of lack of growth, but because their growth did not keep pace with the industrial developments in the emerging industrial burghs mainly in the west. Other historic centres could not even make that: the once thriving Haddington, Brechin, Linlithgow, Banff, and Dornoch, were no longer ranked higher than fiftieth. Conversely, the former hamlets of Motherwell, Wishaw, Govan and Partick, in 1750, had fewer than a thousand residents between them (Flinn, 1977). By 1891, they were all ranked within the top twenty.

[88] Those chosen include burghs from the east and west, as well as emerging and traditional settlements. Data are from the census.

[89] Many occupations changed owing to the introduction of the factory system. This affected textiles, brewing and printing. An important point to consider when comparing the levels of 'persons engaged in industry' from the census of 1871, is the definitions used by the Registrar. For instance, Arbroath and Coatbridge have similar proportions of industrial workers. Industry is also high in Forfar and Hawick, yet low in Stirling. This seemingly surprising finding is due to the census classing occupations as 'industrial' that today are called the 'secondary' sector. Thus, in the nineteenth century census

Table 4.2: The proportion of persons employed in various sectors of the economy for selected burghs, 1851:

BURGH	Industrial	Service	Professions	Agriculture	Other
EDINBURGH	44.3%	33.9%	5.6%	4.5%	10.5%
PERTH	50.0	21.5	3.9	5.7	14.4
Glasgow	67.3	19.8	2.5	1.4	9.0
Dundee	79.3	12.0	1.2	1.2	6.3
Paisley	71.9	15.6	2.8	1.2	8.5
Govan	82.5	9.7	0.8	0.5	6.5
Airdrie	67.2	16.9	2.2	2.1	11.6
Stirling	56.2	22.8	3.7	5.4	11.9
Forfar	55.2	25.5	3.5	5.6	9.4

Source: 1851 Census: Occupations of the people summary table: Parliamentary Papers, I.U.P Press.

Table 4.3 The proportion of persons employed in various sectors of the economy for selected burghs, 1871:

BURGH	Industrial	Service	Professions	Agriculture	Other
EDINBURGH	41.0%	32.3%	8.4%	2.1%	16.2%
PERTH	49.3	27.0	5.7	3.8	14.2
Glasgow	62.0	23.4	3.8	0.7	10.1
Dundee	79.2	10.7	2.6	1.0	6.5
Paisley	72.3	14.9	2.9	0.8	9.1
Govan	80.6	10.8	2.1	0.4	6.1
Airdrie	75.2	12.2	2.2	0.6	9.8
Stirling	52.9	25.9	5.2	4.5	11.5
Forfar	54.3	25.9	5.1	7.1	7.6

Source: 1871 Census: Occupations of the people summary table: Parliamentary Papers, I.U.P Press.

Table 4.4: The proportion of persons employed in various sectors of the economy for selected burghs, 1891:

BURGH	Industrial	Service	Professions	Agriculture	Other
EDINBURGH	36.1%	35.0%	13.8%	1.1%	14.0%
PERTH	46.6	29.8	6.7	2.9	14.0
Glasgow	56.4	28.7	5.4	0.4	9.1
Dundee	75.3	12.4	4.4	0.7	7.2
Paisley	71.9	15.2	3.5	0.5	8.9
Govan	79.9	11.6	2.9	0.3	5.6
Airdrie	74.9	12.5	3.0	0.5	9.1
Stirling	45.8	30.5	6.4	3.7	13.6
Forfar	48.1	28.2	6.1	5.8	11.8

Source: 1891 Census: Occupations of the people summary table: Parliamentary Papers, I.U.P Press.

'industrial' includes a range of occupations from heavy manufacturing to boot-making and handicrafts: thus care is needed when a detailed examination of economic sectors is made.

Tables 4.2 to 4.4 above show that the western burghs have a consistently higher level of industrial employment and a corresponding lower level of service and agricultural sector employment than those in the east.[90] This confirms that the industrial settlements experienced fastest population growth. Edinburgh and Perth had levels of industrial activity half that of their western rivals.

One reason for fast population growth among industrial burghs was the higher levels of in-migration. This can be considered in structure / agency terms. Migration is an action by agents in response to stimuli. Usually, stimuli are in the form of push or pull factors. During the industrial revolution, both push and pull factors were dominant. The shift from the rural areas to towns, as well as the movement from small to large towns indicates a desire for individual betterment and people taking advantage of the new opportunities to be found in burghs which no longer exist, or are perceived to exist, in rural areas. The search for a better standard of living meant many people migrated to the city. The stimulus to migrate, therefore, was generally economic and the decision to move was made in the light of the perceived new advantages that the industrial capitalist and urban system afforded. Furthermore, it was the growing industrial burghs which attracted most migrants. In these settlements, the work opportunities were much better, particularly with the spread of mills and factories. Thus, although migratory decisions were made at a personal level, they were made in response to macro-scale industrial capitalism, for the opportunities afforded by new capitalist structures were used by agents as a reason for migrating. Moves occurred in significant numbers, the impact of which can be identified by a burgh changing its position in the hierarchy and the changing geographical distribution of the most important settlements.

Agency action, such as migration, was increasingly conditioned by capitalism, the result of which reproduced the capitalist structure and had spatial implications that not

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[90] In all burghs industrial sector employment declined in relative terms. This was due to the restructuring nature of the economy. There was an increase in the service and retail sectors of the economy as well as a rise in professional classes.

only affected national settlement patterns but the internal space within burghs. Nationally in Scotland, the processes of structural change that operated were the result of economic development - the new capitalist structure. This was made most manifest in urban centres, which undoubtedly experienced significant internal spatial change (Conzen, 1981b).

Pooley and Turnbull (1998, p.306) enjoin their readers not to lay too much emphasis on the demographic effects of migration. Nevertheless, there would have been significant socio-spatial effects. Migration was an important way in which agents acted within the capitalist structure. Its effects can be identified at different scales as this thesis shows. In the first half of the nineteenth century most migration would be undertaken for economic reasons and included many inter-urban moves. Later migration was largely intra-urban with many more social motives, particularly as class consciousness grew (Jones, 1990).

Of the ten most populated towns in 1851, only 47% of their inhabitants had been born within the burgh, suggesting high levels of in-migration (Devine, 1995). The majority of the migrants were young adults. Thus, women would have been of child-bearing age and their movement to urban centres resulted in significant increases in the natural increase of population of the towns (Jones, 1990). Devine cites the significance of young migrants in Dundee, where in 1851 only 37% of the population was aged twenty and over, whereas 70% of female migrants to that city were of child bearing age (Devine, 1995; p.124).

Migration was predominantly short-distance and intra-regional.[91] Generally, only Glasgow and Edinburgh attracted long distance migrants due to the pull effect of such large cities and the perceived job opportunities therein. Irish migration was highest in the early to mid nineteenth century, with most Irish migrants arriving in the western

[91] The census shows that in Aberdeen, most incomers were from the rural hinterland of Aberdeenshire, the Mearns and Buchan. A third of Dundee's burials in 1820s were born in surrounding counties (Flynn, 1977).

coast towns of Scotland, although Dundee was also a popular destination.[92] Levels of migration in smaller towns point to a degree of stepwise movement - country dwellers moving to, say, Coatbridge, before settling in Glasgow.

Table 4.5 Proportion of burghs inhabitants born within town of residence 1851-1891:[93]

SETTLEMENT	% BORN IN TOWN, 1851	% BORN IN TOWN, 1871	% BORN IN TOWN, 1891
GLASGOW	44.1%	47.4%	62.3%
EDINBURGH	50.3	48.6	56.2
DUNDEE	45.7	51.7	63.8
ABERDEEN	69.5	56.2	60.0
PAISLEY	60.9	64.8	67.8
GREENOCK	na	45.6	68.1
GOVAN	42.6	48.5	55.8
AIRDRIE	41.1	46.5	55.9
PARTICK	na	45.2	55.2
COATBRIDGE	na	40.1	49.2
PERTH	59.4	50.3	52.9

Source: 1851 Census, Parliamentary Papers, 1852-3, part two, 1871 Census and 1891 Census, from the Parliamentary Papers I.U.P.

Table 4.5 above shows levels of migration to selected towns. Glasgow, Dundee and Edinburgh had the highest number of in-migrants. This is consistent with the theory that the largest towns attract the highest number of in-migrants (Ravenstein, 1885). Yet the fourth town of Aberdeen had low migration, although this increased during the century. Migration to Perth also increased as the century progressed, which was the opposite trend to the other cities where migration was higher in the earlier period of industrialisation. This may suggest an industrial time lag in Perth. The table above, based on data from the censuses, uses place of birth to identify migrants. As a result of this, second generation migrants are largely overlooked as only life-time migrants are revealed in the census. This naturally underplays the true extent of migration. Problems of accuracy, bi-decadal intervals, missing data, and unknown places of birth, all add to the limitations of using such census data. Nevertheless, the tables do reveal the broad trend that industrial, western towns had higher levels of in-migration which

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92 In 1851, 18.9% of Dundee residents had been born in Ireland, while less than half the total population had been born within its bounds. Dundee with a redoubling of its population over the period 1800-1850, experienced high in-migration. The 1851 census shows that 54% of those resident in Dundee were born outwith the city - fifty percent of migrants came from its county of Angus, and neighbouring Fife and Perthshire.

93 Figures for Leith are included with Edinburgh in 1851 and excluded thereafter.

suggest that high levels of in-migration significantly affected the growth and socio-space of the burgh. One way in-migration affected agency action was that 'outsiders' could alter the perceptions of a place. For instance, large parts of Old Town Edinburgh were inhabited by the Irish incomers. This alienated many native Edinburgh residents particularly skilled workers, who moved away rather than be associated, through residential proximity, with the Irish who were generally regarded as unskilled and of the lowest social class (see RRC, 1885: 19,273).

The changes to the urban settlements outlined above reflect the changing socio-economic structure of Scotland during the industrial revolution and the action of agents in response to this change. Large-scale population movement to industrialising burghs altered the urban hierarchy and network of burghs. Little can be deduced from these aggregate statistics as to why agents moved. Moreover, little can be understood from cursory macro-analysis about the nature of structure and agency interaction and its effects on urban socio-space, but this section has, at least, provided an historical and geographical context for the more detailed analysis. The factors of change within a burgh and the impact on socio-space need closer examination. In the following, section meso-scale analysis of change in Edinburgh and Perth sheds more light on structure / agency activity and socio-spatial change.

4.4 THE CHANGING SOCIO-SPATIAL STRUCTURE OF EDINBURGH AND PERTH, 1850-1900.

- INTRODUCTION

The previous section has highlighted some of the effects on burghs of structure and agency activity at the macro-level. In this section the question arises of what spatial impact this structure and agency interaction had. In order to answer this, two burghs have been selected for study - Edinburgh and Perth. Their selection is largely based on the fact that they were not the most industrialised burghs and have therefore been

previously under-researched within a nineteenth century context. An introduction is given here outlining the main factors of change in the two burghs before an assessment is made of any spatial impact. This is done with the use of maps showing population density and social status distribution. These maps, although fairly broad guides, will at least, provide an indication of change, from which further investigations can be made as to the precise forms socio-spatial change took.

The tables in the previous section show Edinburgh and Perth to be changing in terms of population, economic sectors, and in-migration. Table 4.6 below shows, in slightly more detail, exact population change.

Table 4.6 Population change of Edinburgh and Perth 1801 - 1891: [94]

CENSUS YEAR	Population: Edinburgh	Population: Perth
1801	66,994	14,878
1811	81,784	16,948
1821	112,235	19,068
1831	136,301	20,016
1841	144,077	20,167
1851	160,302	23,835
1861	171,311	24,817
1871	196,979	25,585
1881	221,892	26,236
1891	261, 225	29,899

Source: Census summary tables: Parliamentary papers 1831, 1851, 1891: I.U.P Press

The populations of Edinburgh and Perth increased considerably throughout the nineteenth century: Edinburgh grew at a much faster pace than Perth. In both towns, however, growth rates are greater in the early part of the century. This points to high in-migration which is consistent with the Highland Clearances and high mobility from Ireland during this period.[95] From 1851, although population growth continued, it did so at a slower rate, reflecting the national trends of a slowing birth-rate and general

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[94] The population of Perth is lower in 1801 and 1811 than was recorded in the Statistical Account of 1791 which would seem anomalous. The reason is largely due to differences in boundaries used for enumeration. Moreover, it was usually local clergymen who recorded population for the 1791 account and many of them may have exaggerated their parish population. The population figures in 1801 and 1811 are also likely to be understated as there were only primitive forms of data collection at this early enumeration stage.

[95] Moreover, natural rates of population increase were highest in this period, not least because the average age of migrants was between twenty and forty years (Flynn, 1977).

improvements in public health (Anderson and Morse, 1990). It can be concluded that the urban expansion of Edinburgh and Perth increased over the nineteenth century, but was slower after 1851. Population growth is the first indicator of internal spatial change as it means more houses, more social diversity and perhaps more dynamism.

In terms of economic sectors, tables 4.2 to 4.4 suggest how the service and professional sectors of Edinburgh and Perth grew at a considerable pace: although this trend was discernible in other burghs, what makes Edinburgh and Perth stand out is that the industrial sector is relatively low. Increased service and professional sectors suggests an increased middle class population, the spatial effects of which are likely to be considerable, perhaps even more so than in an industrial city. For instance, Dundee would be almost homogenous in its industrial working class urban landscape, yet Edinburgh or Perth, might have more social areas as a result of a greater number of occupational groups and with this an increased class or status consciousness which influences agents' action and further socio-spatial change.

A third way in which the macro-scale structure and agency interaction would affect the individual burgh was through in-migration. Again, despite low levels of industry, table 4.5 reveals that Edinburgh and Perth did experience high levels of in-migration. Migration represents an agent's response to structural change: not all migrants would move to work in factories, many migrants were, after all, middle class. Edinburgh, being a large settlement, attracted a greater number and mix of in-migrants. This impacted upon the socio-space and the perceptions of the city, especially in areas of high concentration of migrant communities. In-migration would affect urban space by a growth in housing stock, but also in a Burgessian 'invasion and succession' process. It would have the effect of shifting the population around the city. Migrants, with no attachment to the burgh, would also tend to be more mobile once in Edinburgh and therefore adding to the dynamic nature of the city (Elliot and McCrone, 1980) and the changing socio-space.

But the extent of the impact of in-migrants as well as economic sector change and population growth, needs to be assessed spatially. How is it possible to show the above impacts? How can change in Edinburgh and Perth be assessed? Were Edinburgh and Perth changing? Years of structural change and the action of agents influenced by and in response to this change is likely to lead one to answer in the affirmative. However, the impact needs to be assessed. Density maps are of some help here. They will point to areas of population change around the city, indicate a shifting population, act as a surrogate for the standard of living and, perhaps, adumbrate the structural changes occurring within the burgh. They are nevertheless, limited in what can be concluded from them, however, as a broad sketch of change they provide an adequate isagogic assessment.

- *POPULATION DENSITY AND SOCIO-SPATIAL CHANGE*

Population density is usually expressed in terms of persons per square mile or at other areal scales (Saunders, 1981). Whereas this is appropriate when considering counties or countries (the macro-scale), it has a limited scope in urban socio-spatial analysis. For instance, a high density of persons per acre would, usually, point to a low status area. However, if an acre of land comprises half high-storey tenements and half railway sidings, the measurement of population density in this area will be understated because of a large tract of land not used for residential purposes. It is more appropriate, therefore, to subtract the non-residential land from density calculations. Alternatively, another form of density measurement may be used. The census enumerators' reports for 1861 onwards in Scotland provide information on the number of windowed rooms per dwelling unit. This information may be used in conjunction with the area's population to provide a measure of persons per windowed room within the given area (usually an ED). If a district had an average density of two and a half or more persons per windowed room, it can be thought to be overcrowded (Gauldie, 1974).[96]

[96] In his sanitation report Littlejohn (1866 p. 28) suggests that three persons per windowed room is a 'high and undesirous density level which would result in a detrimental sanitary level'. He makes a link between high physical density per tenement block and the high mortality rates, and compares 'Old' and 'New' Edinburgh to prove his point - the latter having lower density levels.

Windowed room density is a better measure as it excludes empty buildings and tracts of non-residential land, thus giving a more accurate portrayal of housing conditions.

There is one significant drawback of this method, namely that it ignores the actual size of the rooms. This information is useful to make density analysis meaningful. Details of the size of rooms are not easily attainable, but there are a few sources. Plans and architectural reports for all new or improved properties are available in the Dean of Guilds Register in Edinburgh. Furthermore, reports, such as the Littlejohn Report into the Health and Sanitation of Edinburgh, 1866, and The Royal Commission on the Housing of the Working Class, 1885, are available, and provide insight into living conditions, including house and room sizes, and the number of people therein.[97] The absence of detailed information on room sizes in the census can be overcome to some extent using these sources. However, there are also conceptual limitations more difficult to surmount. Family sizes differed between social groups; the working class often had up to thirty percent more children than middle class families (Bédarida, 1990 p. 228), although differential mortality probably mitigated the effects of high fertility in terms of over-crowding. Furthermore, poorer families often had a need to take in lodgers, thus extending their household, and Roman Catholic families generally had more children than all other groups (Gauldie, 1974). During the late nineteenth century the Roman Catholic population of Edinburgh was almost exclusively low status working class (RC, 1885: 19,273).[98] Higher income groups often had live-in servants, a factor that also has an impact on the density calculations. Finally, over the period 1850-1900, the average family sizes fell in Britain, falling sharpest among the middle classes (Pooley and Turnbull, 1998 pp. 194-197). Thus social, economic and cultural

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[97] The average one roomed tenement apartment in Edinburgh - the most common dwelling unit in the Old Town (Littlejohn, 1866) - was fourteen by eleven and a half feet (Fergusson, 1958, Smout, 1986 and Rodger 1989, pp 36-7). Evidence to The Royal Commission on the Housing of the Working Class on average size of rooms stated that the city average for a two roomed tenement apartment was thirteen feet by twelve feet (RC: 1885: 18,676). Two roomed tenements had a larger room and a smaller room ten feet by eight feet or smaller - and householders in both types of dwelling units took in lodgers (Fergusson, 1958). Tenements in Perth were similar in style but were generally slightly larger than those in Edinburgh (Findlay, 1984).

[98] Perth was a Jacobite Town with few Roman Catholics so generalisations are difficult to make here.

factors must be considered when using windowed room data - the raw figures alone can be misleading and must be put within a wider context.

Edinburgh was divided for administrative purposes into wards, civil and ecclesiastical parishes, as well as registration districts, sub-districts and EDs. The smallest units for which data are available to calculate density per windowed room, notwithstanding the EDs themselves, are the ecclesiastical parishes.[99] In 1851, there were seventeen such parishes within Edinburgh. By 1891 there were thirty-four, reflecting the growth in population and the changes to the city boundary. The maps (figures 4.5 to 4.8) show graphically the changes in population density in Edinburgh over the years 1861-1891.[100] Table 4.7 gives the actual densities per windowed room for each of the ecclesiastical parishes.

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[99] The suitability of ecclesiastical parishes for socio-spatial study is dependent on the size of the settlement. In Edinburgh they are small enough not to cover widely diverse areas. For instance, no parish covers parts of the Old and New Town. Fortunately parishes remain wholly within a distinct locale, for instance, New Town, Old Town, the southern suburbs, and the industrial west end. Civil Parishes on the other hand are much larger, and so fewer, but their size renders them difficult to use meaningfully, despite more data being available for them. The one major drawback of using ecclesiastical parishes is that information on population and number of dwellings is all that is provided. This means no occupationally derived social status composition can be calculated without recourse to ED level data.

[100] These are arranged in order of highest density in 1861. The 1851 Census provides no information on the number of windowed rooms in a dwelling.

Figure 4.5: EDINBURGH 1861: Population Density of Parishes

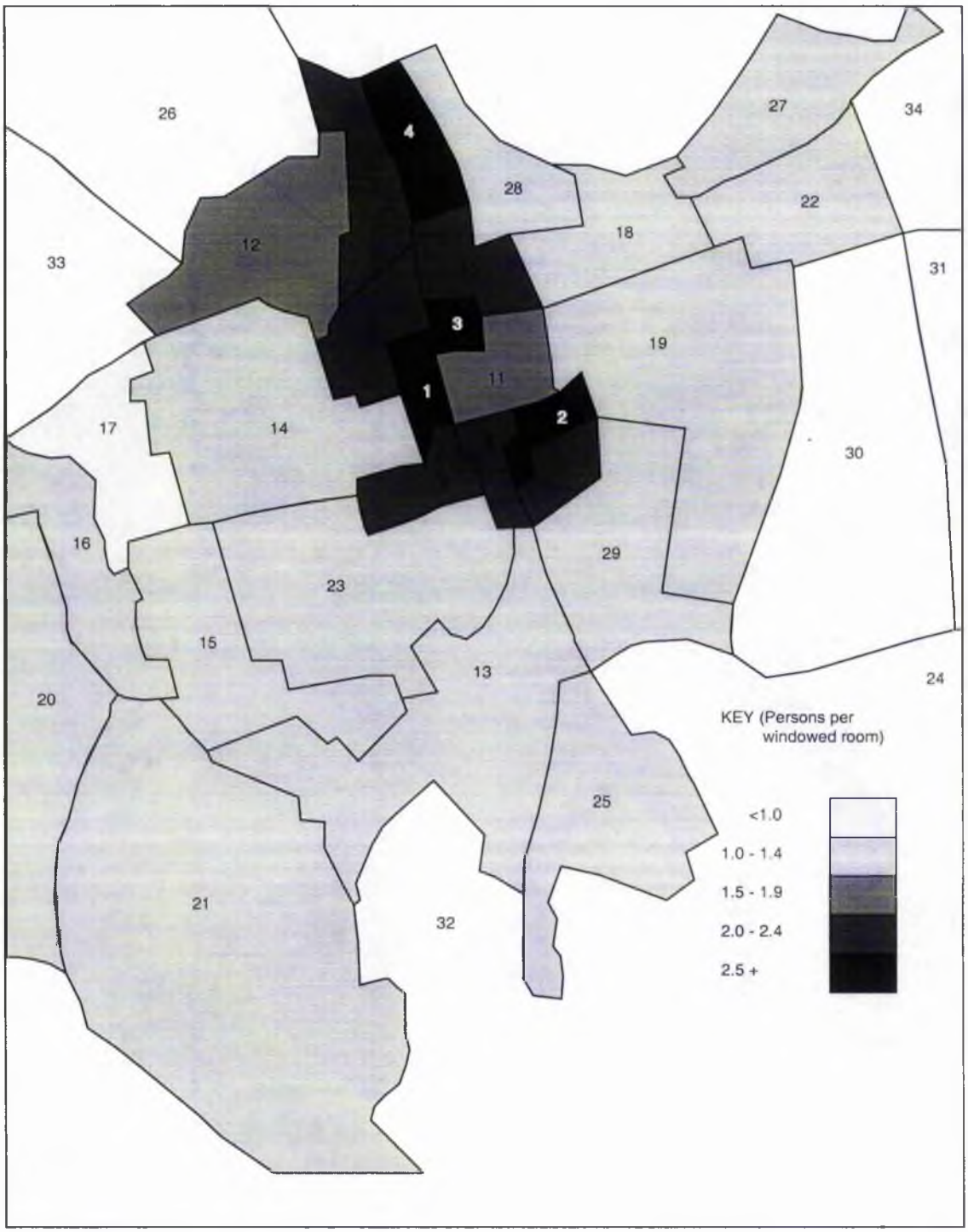

Figure 4.6 EDINBURGH 1871: Population Density of Parishes

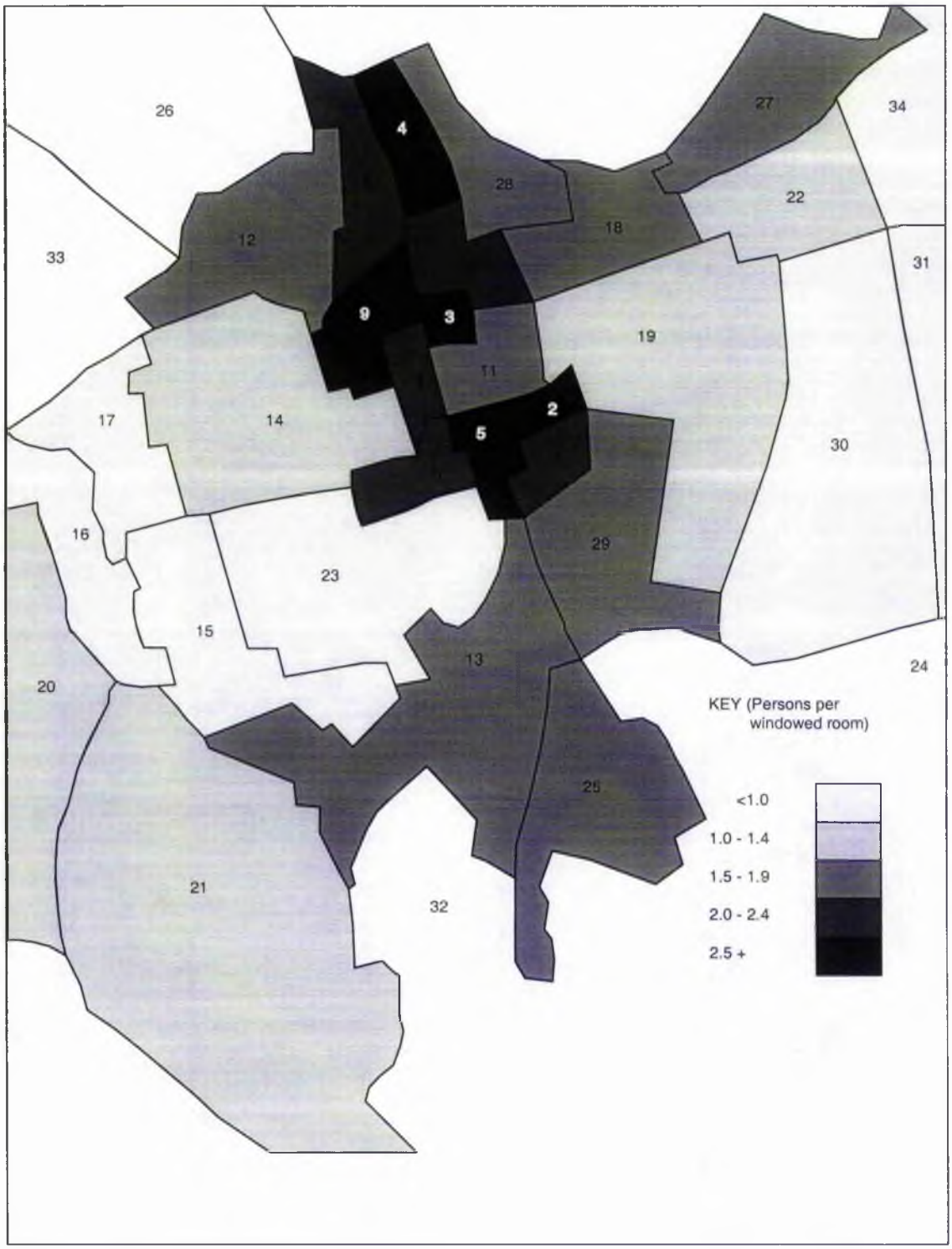

Figure 4.7 EDINBURGH 1881: Population Density of Parishes

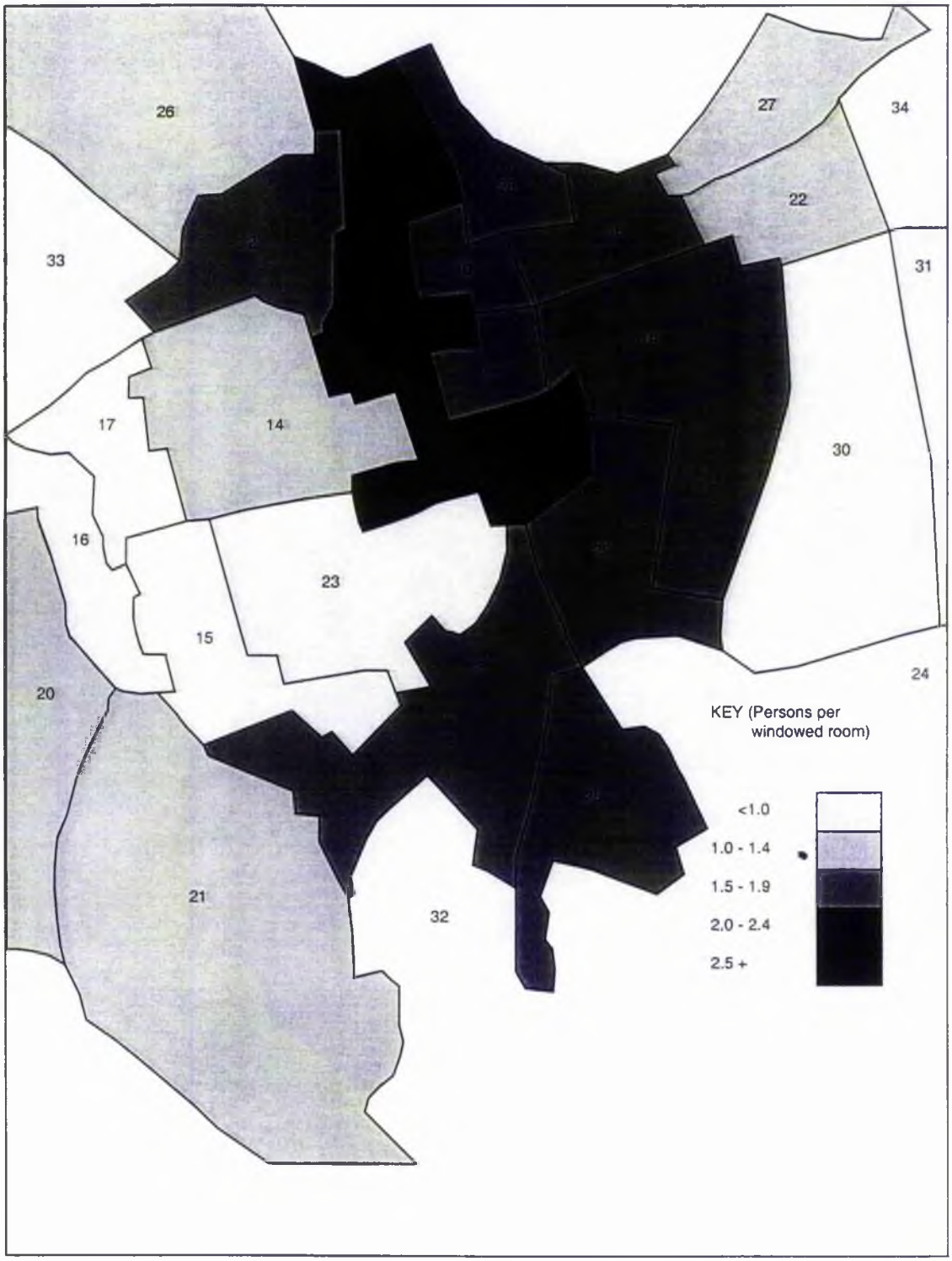

Figure 4.8 EDINBURGH 1891: Population Density of Parishes

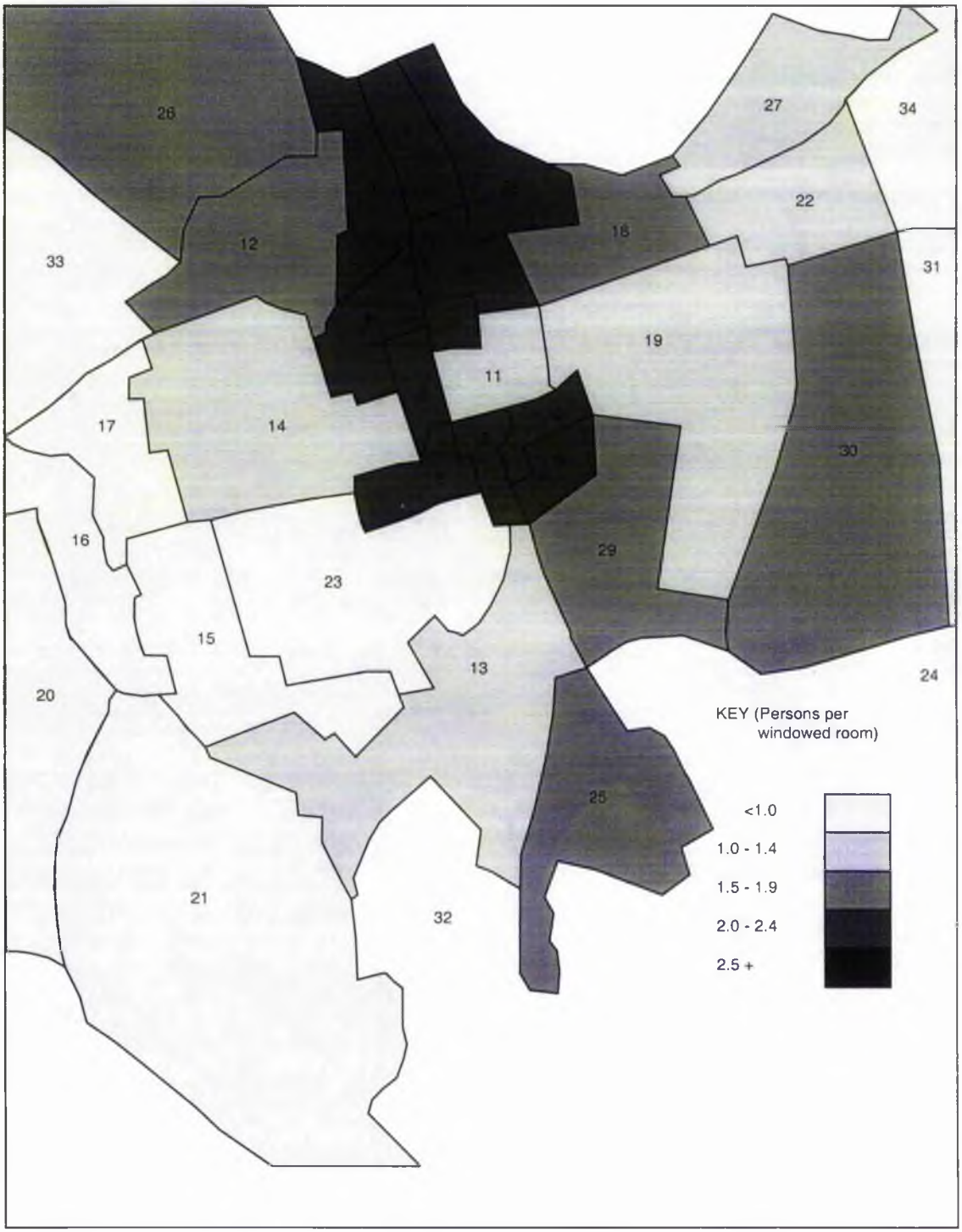

Table 4.7 The density of population per windowed room in the ecclesiastical parishes of Edinburgh 1861-1891:[101]

No.	Parish	1861	1871	1881	1891
1	New North	3.7	2.3	2.4	2.3
2	New Greyfriars	2.9	2.6	2.0	2.1
3	Tron	2.7	2.8	2.3	2.3
4	Old	2.6	2.6	2.4	2.2
5	St John	2.4	2.6	2.4	2.2
6	Canongate	2.3	2.3	na	2.4
7	Old Greyfriars	2.3	2.3	2.2	2.2
8	Tolbooth	2.3	2.3	2.2	2.2
9	Trinity College	2.3	2.5	2.4	2.2
10	Lady Yester	2.2	2.3	1.8	2.2
11	High (or St Giles)	2.0	1.8	1.7	1.5
12	Greenside	1.4	1.4	1.5	1.4
13	St Cuthbert	1.3	1.5	1.5	1.3
14	St Andrew	1.0	1.0	1.0	1.0
15	St George	1.0	0.9	0.8	0.7
16	St Stephen	1.0	0.9	0.9	0.9
17	St Mary	0.9	0.9	0.9	0.9
18	Lady Glenorchy	na	1.8	1.9	1.9
19	Buccleuch	na	1.4	1.6	1.5
20	St Bernard	na	1.1	1.1	1.0
21	Dean	na	1.0	1.0	0.8
22	Newington	na	1.0	1.0	1.2
23	St Luke	na	0.8	0.9	0.8
24	Morningside	na	0.7	0.8	0.7
25	St David	na	na	1.7	1.7
26	Abbey	na	na	1.4	1.6
27	St Leonard	na	na	1.4	1.4
28	St Margaret	na	na	na	2.1
29	St Aidan	na	na	na	1.7
30	St Michael	na	na	na	1.6
31	Robertson Memorial	na	na	na	0.9
32	West Coates	na	na	na	0.8
33	Granton	na	na	na	0.6
34	Mayfield	na	na	na	0.6

Source: The Census enumerators' reports. na = not applicable: the parish had not been created in the year in question and its figures are included in the parish from which it was taken.

Figure 4.5 shows a situation of contrast in 1861. The dark areas represent the Old Town parishes and these have the highest densities. Many of the outlying parishes maintained a rural feel at this stage with low density. Over time the levels of

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101 Data are from successive Parliamentary Reports of the Census of Scotland, 1861, 1871-73 and 1891. The data collected are found in the summary tables and have been calculated based on actual population enumerated and total number of windowed rooms in each parish for inhabited dwelling. The number in the column of the extreme left refers to the maps (figs 4.5 to 4.8).

population density increase in the peripheral parishes. In 1881, the darker shading of central parishes could suggest urban development and house building. By 1891, the contrast between old Edinburgh and the rest of the city is less pronounced. The density changes can be viewed in terms of structure / agency interaction, although the limited data mean that detailed conclusions cannot be made. Nevertheless, two factors are seemingly at play - structural processes and population shifting. The structural processes operating are industrialisation and suburbanisation. Consider figure 4.7: this shows the situation in 1881. The population density map shows that parishes numbered 13, 25 and 29 have increased population density since 1861. These areas, corresponding to Fountainbridge / Haymarket / Dalry, are the industrial zone of Edinburgh. Here most inward investment would have been made and substantial house building for workers undertaken. Lesser industrial zones in Newington / St Leonards (18, 27, 28) suggest a similar trend. Thus, the structural change of industrialisation in these areas has also increased population density, perhaps through shifting population and house building.

Suburbanisation is the other process which can be noted through the increased population densities to the south of the Old Town. In parish numbers 19, 22, 30 and 31 - areas such as Morningside and the Grange - density of population increases, not to high levels, but to levels that at least indicate something happening, perhaps suburbanisation. Here the limiting feature of the population density maps means that nothing more can be confidently said. Nevertheless the structural change is seemingly related to the population shift and house building and again could be a reflection of structure / agency interaction.

Some other trends can be suggested. The map of 1871 reveals a falling population density in parishes numbered 14 to 17 and 23. This is Edinburgh New Town, an area of very high status residences. A fall in density here could be related to a growth in

high status residents and a link to class consciousness.[102] Also, in parish 11, a dramatic fall in population density in this part of Old Town is in contradistinction to the rest of the Old Town. This parish includes the High Courts, St Giles Cathedral and the City Administration, and thus, the fall in density may be a reflection of the growth of the professional and service sectors to this area. Perhaps a more secure conclusion can be drawn from the known fact that density levels do seem to be lower in the Old Town compared to 1861: this is almost certainly attributable to slum clearances in response to the 1866 Sanitation report (compare figure 4.6 and 4.7 for example). But slum clearances are yet another of these urban processes of structural change, to which agents responded - hence perhaps the dramatic fall in population density in parish 11 (St Giles) in 1891.

Although, the density maps are indicating change of some kind, they cannot be more specific by their very nature. The fact that population density change is occurring over time is evident from the maps, and this could mean population shifting - agency action - in response to structural changes such as industrialisation. However, this cannot be concluded at this stage without recourse to further evidence.

Population density levels in Perth were different from those in Edinburgh. No ED in Perth exhibited a density level as high as those recorded for some of the parishes of Edinburgh. Because of the smaller size of Perth, the use of density per windowed room at the ecclesiastical parish level is inappropriate.[103] In Perth it is more useful to use the census enumerators' reports to calculate the density per windowed room for each ED.[104] Figures 4.9 to 4.12, and the table 4.8 below, show population density per windowed room in Perth and the change over the successive census years.

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[102] The houses built in this part of the New Town over that period were especially spacious (Elliott and McCrone, 1980). Had density per acre been used, this area would have shown a considerable increase in density giving a false impression of what was actually happening.

[103] Perth comprised only four ecclesiastical parishes in 1861 and some of these extended well into the Perthshire countryside. In Edinburgh, ecclesiastical parishes are larger than the EDs. However, they do remain small enough not to cover widely diverse areas.

[104] The enumerator's schedules allow for a calculation of the total population of each ED. This total has been divided into the total of windowed rooms to give density per windowed room values. Again, uninhabited dwellings have been omitted and data from the prison, various institutions and person's resident aboard ships and boats in Perth docks on the night of the census have also been removed.

FIGURE 4.9 PERTH 1861

POPULATION DENSITY OF ENUMERATION DISTRICTS

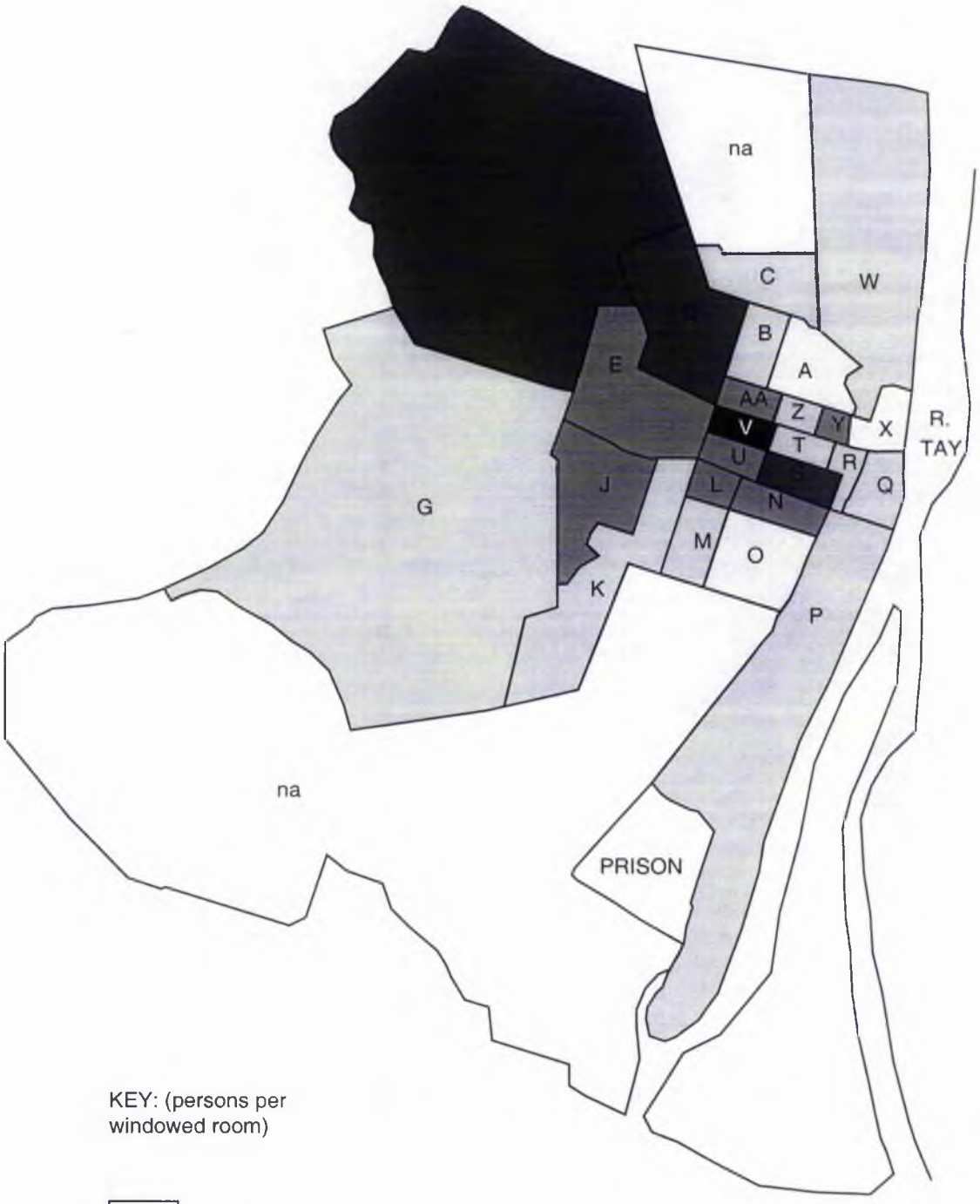

FIGURE 4.10 PERTH 1871

POPULATION DENSITY OF ENUMERATION DISTRICTS

KEY: (persons per windowed room)

< 1.0
1.0 - 1.4
1.5 - 1.9
2.0 - 2.4
2.5 +

na = no data

FIGURE 4.11 PERTH 1881

POPULATION DENSITY OF ENUMERATION DISTRICTS

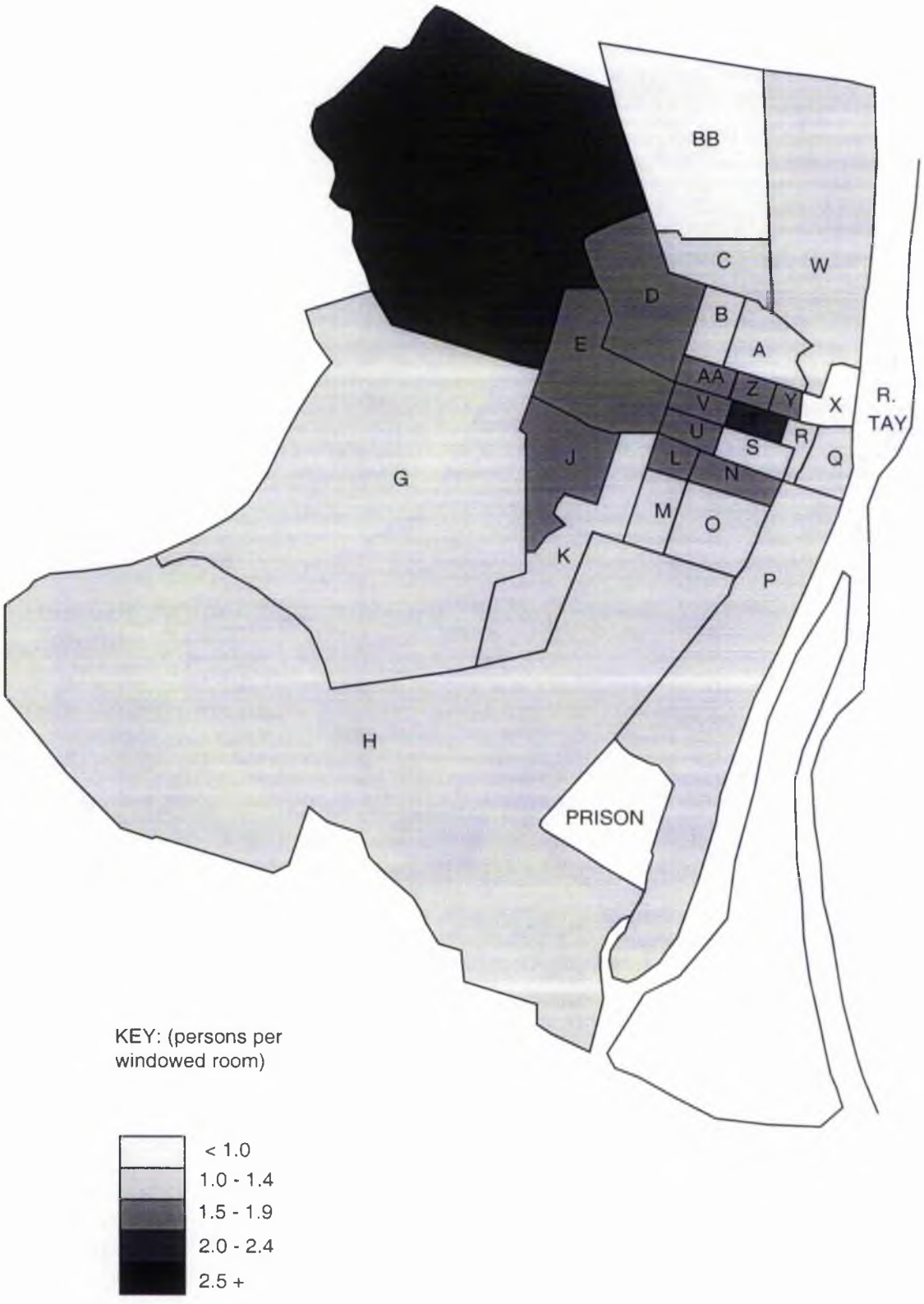

FIGURE 4.12 PERTH 1891

POPULATION DENSITY OF ENUMERATION DISTRICTS

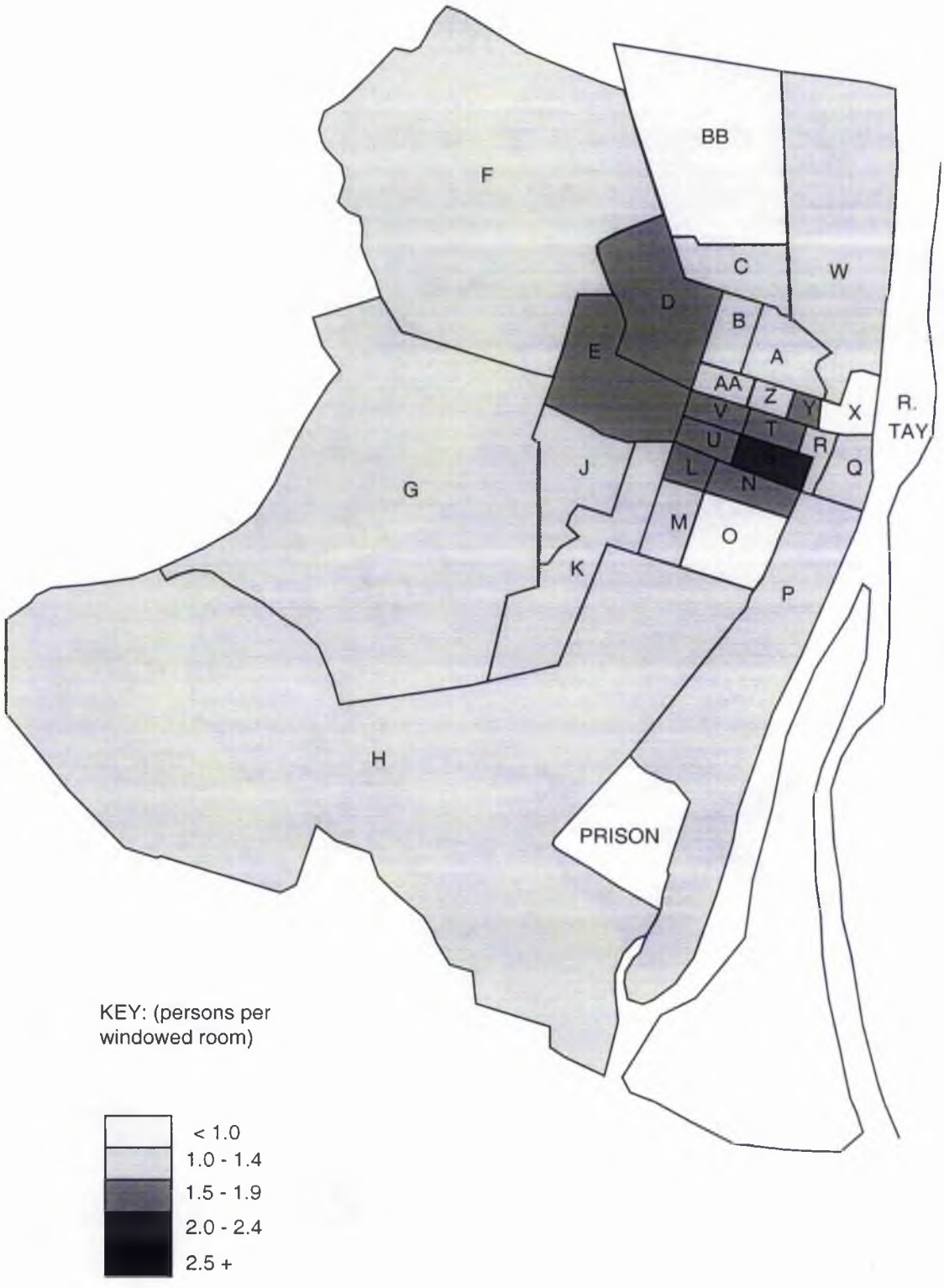

Table 4.8 The density of population per windowed room in the ecclesiastical parishes of Perth 1861-1891:[105]

Enumeration District	1861	1871	1881	1891
A - Blackfriars	0.9	1.0	1.0	1.0
B - Mill Street	1.2	1.0	1.2	1.0
C - Barossa Place	1.2	1.1	1.2	1.1
D - City Mills	2.2	1.5	1.8	1.6
E - Caledonian Road	1.6	2.3	1.9	1.9
F - Dovecot	2.0	1.7	2.1	1.3
G - Craigie	1.2	1.3	1.3	1.2
H - Upper Craigie	na	na	1.1	1.0
J - Station	1.8	1.6	1.5	1.4
K - St Leonard's Bank	1.3	1.3	1.3	1.0
L - Canal Crescent	1.9	1.9	1.7	1.6
M - James Street	1.0	1.0	1.0	1.0
N - Canal Street	1.9	1.7	1.9	1.6
O - Marshall Place	0.8	0.9	1.0	0.9
P - Riverside	1.3	1.2	1.4	1.2
Q - Tay Street	1.4	1.4	1.4	1.2
R - Watergate	1.1	1.0	1.0	1.2
S - St John's	2.0	1.9	1.2	2.0
T - City Hall	1.2	1.9	2.2	1.8
U - South Street	1.8	2.1	1.9	1.8
V - High Street (east)	2.5	1.6	1.8	1.6
W - North Inch	1.4	1.2	1.3	1.2
X - George Street	1.0	1.0	1.1	1.1
Y - Skinnergate	1.5	1.5	1.5	1.6
Z - Cutlog Vennel	1.4	1.2	1.5	1.4
AA - High Street (west)	1.6	1.6	1.5	1.3
BB - Balhousie	na	na	0.6	0.8

Source: The Census enumerators' reports and summary tables 1851-1891.

The population density levels in Perth is less, on average, than in Edinburgh. Being a smaller town, Perth was, perhaps, less dynamic and much less diversified in terms of economic and employment sectors. Space was less scarce, so buildings could be more commodious. The densest areas of Perth in 1861, as with Edinburgh, were the oldest parts of the city. High Street (east) had a density per windowed room of 2.5 people in 1861. This was the highest experienced in Perth between 1851 and 1891. This district and the districts adjacent were characterised by small densely packed tenements.[106] Perth, like Edinburgh, displayed a herring-bone pattern of closes, although in Perth these were called vennels, rather than wynds. City Mills (D) and Dovecot (J) also

105 The EDs of Perth have been standardised so comparisons over time can be made. In reality there were more districts than shown. Some have been grouped together reflecting the changes made to their boundary. For instance in 1851 district Z (Cutlog Vennel) comprised two EDs.

106 Perth's tenements rarely exceeded four storeys in height: in Edinburgh eleven storey tenement blocks in the Old Town were not unusual (Bell, 1973).

showed high levels of density. This is directly attributable to the economic structure of these districts. City Mills was one of the few industrial EDs. Tenements were small and were inhabited by a disproportionate number of lower social status groups compared with the city as a whole. This was reflected in the high density of the area as families were large and accommodation rather cramped. In Dovecot, the outwardly bucolic characteristics of the district meant that most of the residents were agricultural labourers living in small cottages, often no more than one room fourteen feet square (Findlay, 1984). The cottages were 'but 'n ben' style, comprising a living room with kitchen area, and an additional sleeping room. In such a district density per acre is an especially inappropriate measure. Agricultural workers would be mistaken for a high status group if density per acre was considered. The area became, by 1891, suburban - cottages were replaced by villas and ploughman by professionals. Neighbouring Craigie (G) was the first to show any signs of suburbanisation. It had a lower density than Dovecot and remained stable over the period to 1891.[107]

The fluctuations in the population density levels of central Perth between 1861 and 1891 were quite startling, given the short period, but suggest an area in transition and of high mobility.[108] Perth is too small to have a New Town on the same scale as Edinburgh, but 'Georgian Perth', consisting of Blackfriars (A), Mill Street (B) and Barossa Place (C) display some of the finest period town houses north of Edinburgh. Throughout the period population densities here remained low with a slight fall by 1891.[109] The South Inch, covering the EDs of James Street (M) and Marshall Place (O), was similar to its northern counterpart in architectural style, social group

[107] Dovecot, on the other hand, changed from an area of agricultural workers to an area of petty officials. This transformation was reflected in the density level which fell from a peak of 2.1 in 1881 to a relatively modest 1.3 ten years later. Upper Craigie was very sparsely populated in 1861. Indeed its few residents are included in the statistics for Craigie. However, by 1891 over seven hundred people lived here mainly in villas, with an average of one person per windowed room - a case of suburbanisation (?).

[108] For example, St John's (S) had a density of two people per room consistently throughout the period, except in 1881, when it fell to a low 1.2. Its population halved in 1881 from what it had been in 1871 and this was due to the large scale 'slum' clearance in the area and the development of new roads (Findlay, 1984). By 1891 new, better built and more spacious tenements were erected and density levels returned to what had been the norm, although the population remained lower than before (Urquhart, 1906).

[109] Balhousie a Victorian extension to the Georgian Town and had the lowest density in 1881, the slight rise by 1891 reflecting the rise in population and the building of new, smaller houses, the population more than doubled in this district in ten years.

representation and population density. Suggesting a relationship that low density is associated with high status.

The relationship between low density and high status indicates a structure / agency interplay. It can be argued that density levels, by indicating living conditions, add to an agent's sense of place and feeling for a particular location. The growing sensibilities of the middle classes meant that high density was no longer acceptable. Thus it is likely, they chose, and had the means to move to, lower density areas. In some instances, other groups were enticed to areas of lower density. One of the major selling point of the Edinburgh Co-operative Company's Colonies housing was the fact that it was located outwith the city centre (Begg, 1866; see also Pipes, 1998). Here is an example of how an influential urban gatekeeper used feelings or the aspirations of certain agents, in this case the labour aristocracy, to induce them to 'better' areas (see chapter five). Living in low density areas was another way of reinforcing social differences and highlights the inseparability of the social and the spatial.

The density maps of Edinburgh and Perth indicate a change. But that is the extent of what can be safely concluded. Much can be speculated, but further evidence is needed. Population density maps are therefore limited in what they can show concerning socio-spatial change. However, their link with status means that when viewed with status distribution maps a clearer picture may emerge which may allow securer conclusions to be drawn. Moreover, the process of suburbanisation and industrialisation along with economic sectoral change, which the population density maps tentatively suggest, may be examined in relation to social status. For instance, suburbanisation is associated with middle class growth, such growth may be revealed in social status group (or class) distribution maps.

- CLASS DISTRIBUTION AND SOCIAL SPACE

The population density maps certainly show change, and that clearly there was something happening within the burghs to change population density levels. To advance the assessment of meso-scale socio-spatial change further, social status maps are produced. Again it can be asked if Edinburgh and Perth are changing, and if so in what way, and does this relate to population change and structure / agency interaction?

Figures 4.13 to 4.16 show the status distribution of four social status groups within Edinburgh and 4.17 to 4.20 show Perth, for the years 1851, 1871 and 1891. The populations of Edinburgh and Perth are divided into a typology of social status groups which allows analysis of the distribution and proportional change within the two cities between 1851 and 1891.[110] Tables 4.9 and 4.10 show the socio-status compositions of Edinburgh and Perth. The data are from the occupational classifications of social status used by the Registrar General for each census. Care is needed when using official statistics. With occupational data, the nuances are often missed - the factory owner, might be labelled as 'manufacturer' but so might a journeyman nail-maker in his employ.[111] Furthermore, the use of just four categories can be criticised in a period renowned for considerable social stratification, a point stressed in chapter three. However, the use of manual and non-manual, skilled and unskilled data, do allow the main social divisions in society to be examined.

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[110] Only the censuses from 1851, 1871 and 1891 have been selected, because of the amount of data involved despite the lack of detail on temporal trends this implies, major changes are detectable.
[111] This was less likely in censuses after 1851.

Figure 4.13 Upper non-manual group distribution: Edinburgh 1851-1891

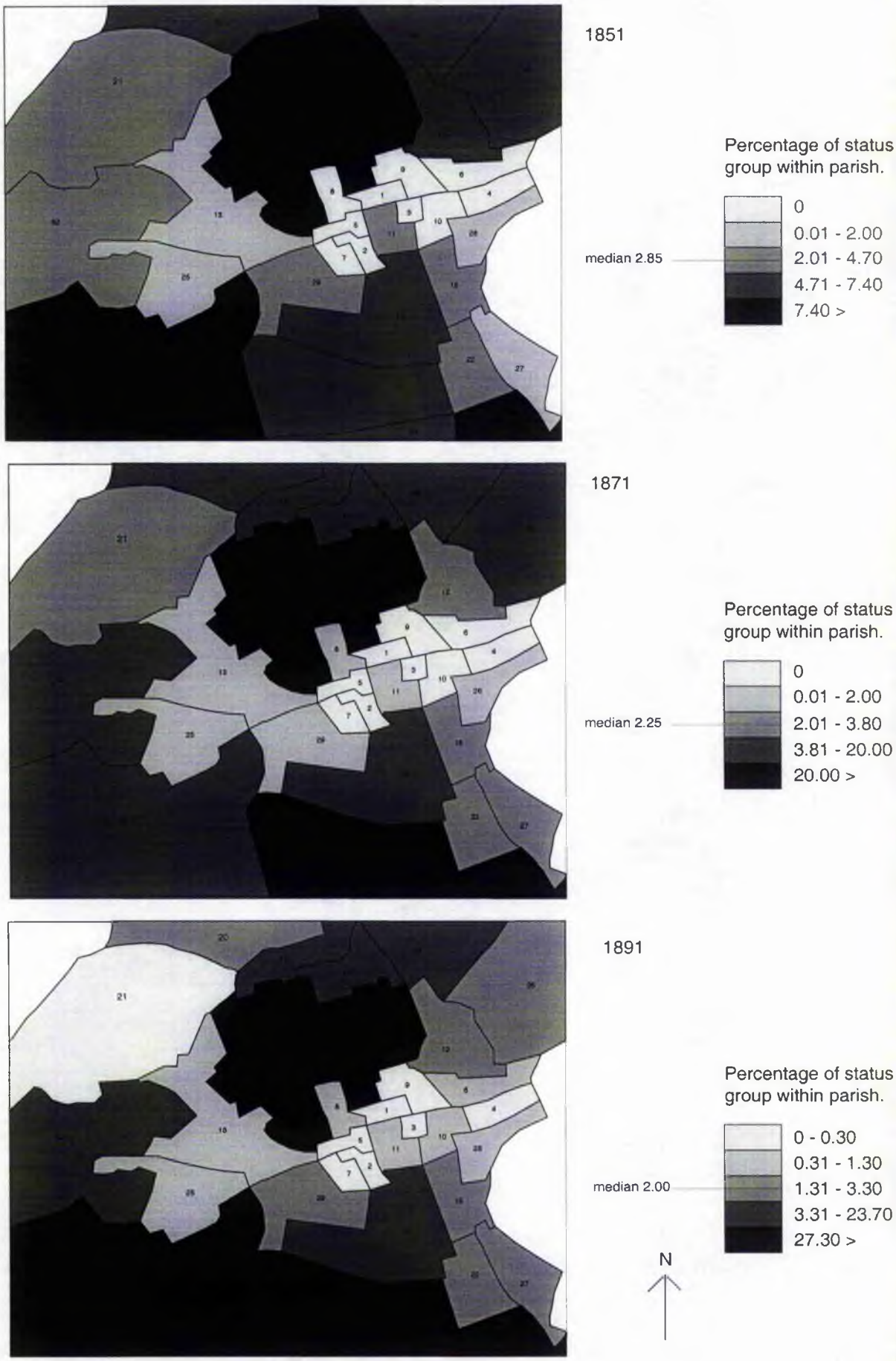


Figure 4.14 Lower non-manual group distribution: Edinburgh 1851-1891

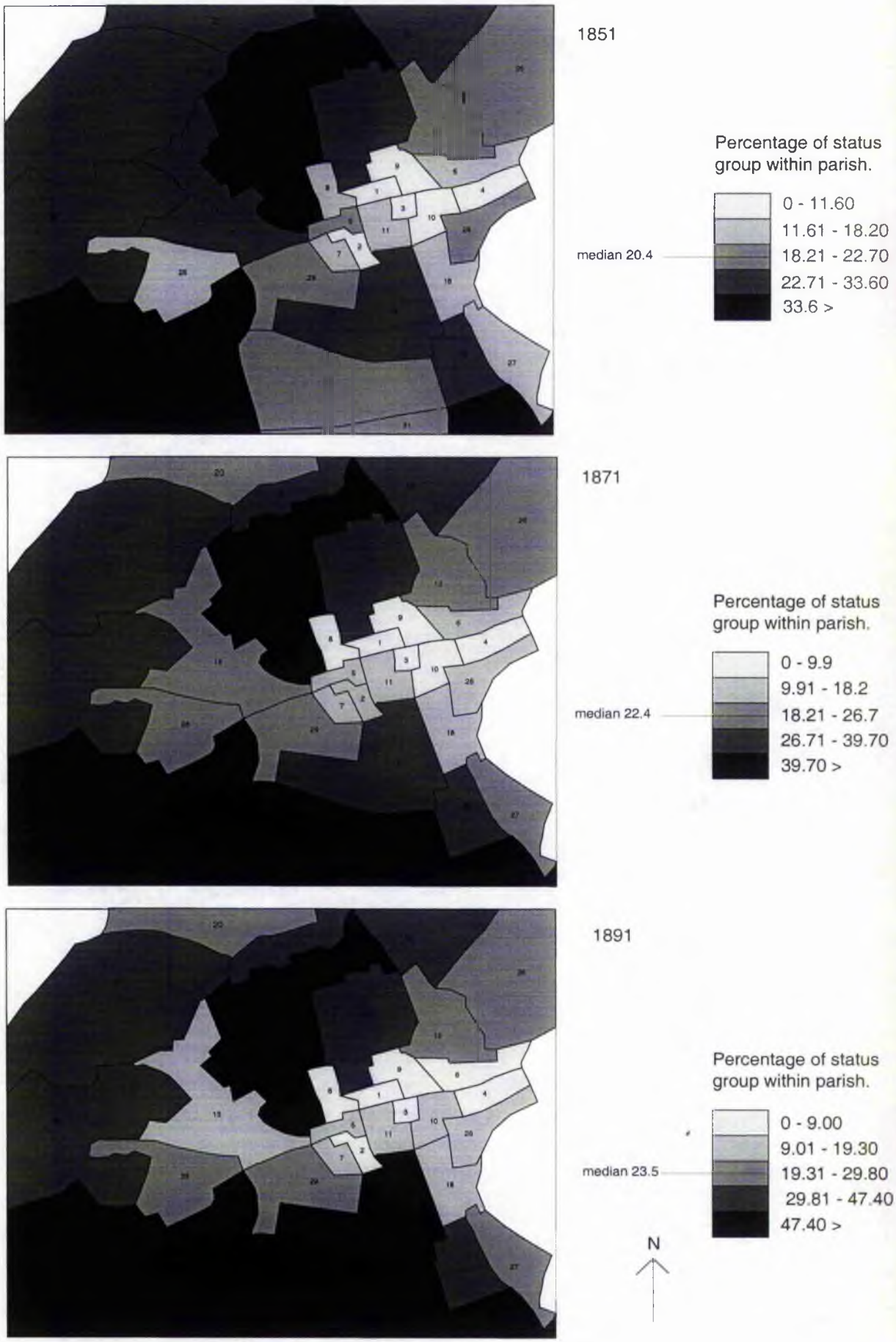
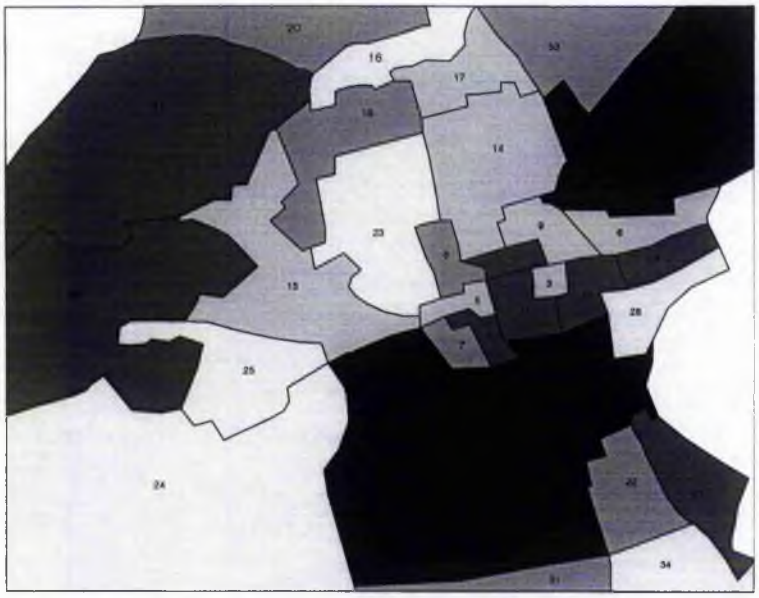


Figure 4.15 Skilled manual group distribution: Edinburgh 1851-1891

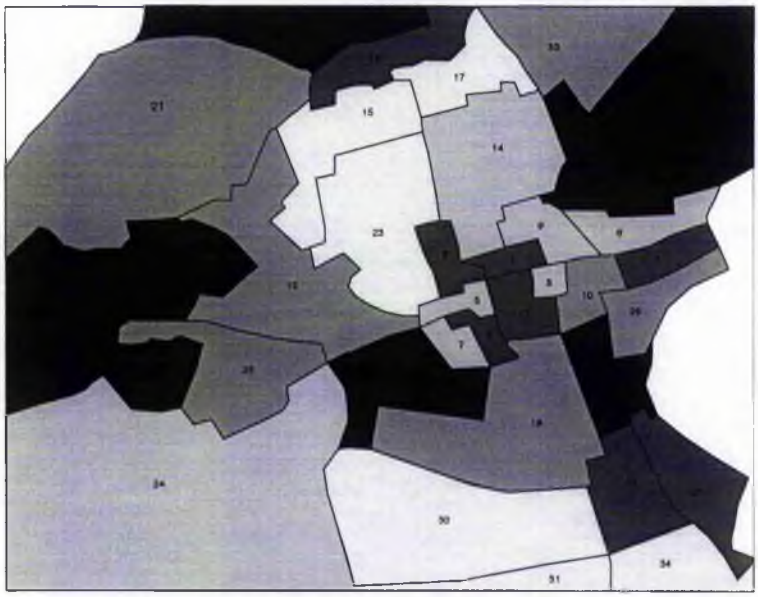


1851

Percentage of status group within parish.

median 40.9

0 - 30.90
30.91 - 37.70
37.71 - 43.00
43.01 - 46.80
46.81 >

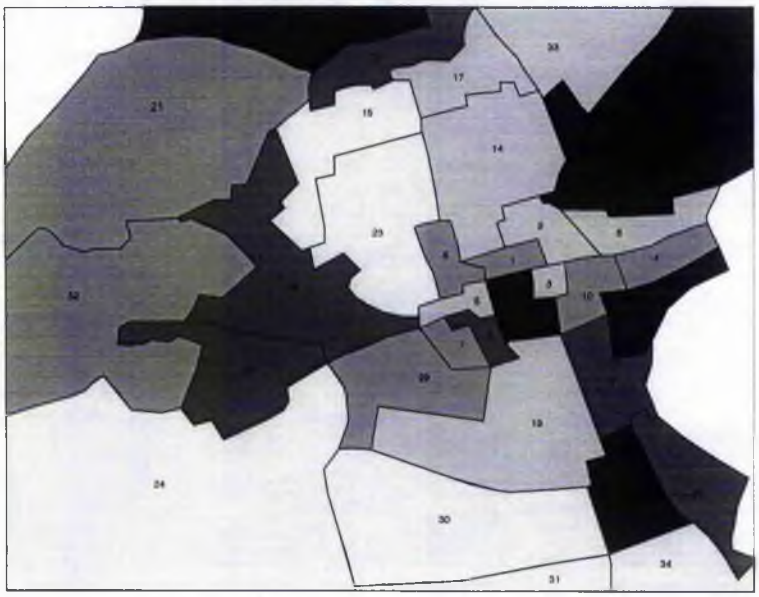


1871

Percentage of status group within parish.

median 37.5

0 - 29.50
29.51 - 33.60
33.61 - 40.91
40.91 - 45.20
45.20 >



1891

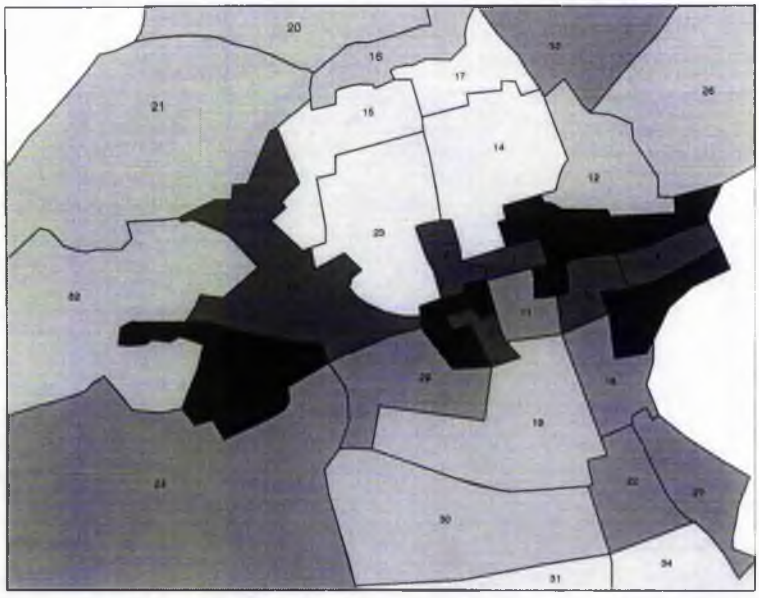
Percentage of status group within parish.

median 36.1

0 - 17.90
17.91 - 28.90
28.91 - 39.90
39.91 - 42.40
42.40 >

N

Figure 4.16 Unskilled manual group distribution: Edinburgh 1851-1891



1851

Percentage of status group within parish.

median 27.8

0 - 19.30
19.31 - 24.90
24.91 - 35.80
35.81 - 48.10
48.10 >

1871

Percentage of status group within parish.

median 28.1

0 - 10.40
10.41 - 21.70
21.71 - 36.10
36.11 - 51.80
51.80 >

1891

Percentage of status group within parish.

median 28.2

0 - 7.50
7.51 - 21.30
21.31 - 34.90
34.91 - 56.70
56.71 >

N

Table 4.9 Social group change in Edinburgh, 1851, 1871 and 1891:[112]

Year	Upper non-manual	Lower non-manual	Skilled manual	Semi/unskilled
1851	4675 (6.7%)	15032 (21.5)	28209 (40.3)	22145 (31.6)
1871	4986 (6.0)	19720 (23.8)	30504 (36.8)	27623 (33.3)
1891	5711 (5.4)	29804 (28.1)	33345 (31.4)	37376 (35.2)

Source: Census occupation tables: 1851,1871, 1891.

Table 4.10 Social group change in Perth, 1851, 1871 and 1891:

Year	Upper non-manual	Lower non-manual	Skilled manual	Semi/unskilled
1851	146 (3.3%)	960 (21.5)	2001 (44.8)	1359 (30.4)
1871	170 (3.5)	1107 (23.1)	1856 (38.7)	1661 (34.6)
1891	221 (4.1)	1451 (26.9)	1621 (30.0)	2108 (39.0)

Source: Census occupation tables: 1851, 1871, 1891.

The industrialisation and urban growth of Scotland had an impact on the social composition of the populations of Edinburgh and Perth despite neither being 'industrial'. Perth experienced a decline in skilled manual households absolutely and proportionately, a fall from 44.8% to 30%. This is attributable to the structural change of the economy of the town in response to the national changes, that is, a move from skilled, craft-based occupations, to mills and factories lines, although not on any grand scale as most industrial concerns were small and inchoate.[113] The corollary to this is the rise in the semi- and unskilled manual group - in Perth this group rose from 30.4% of householders to 39%. Edinburgh also experienced changes in this respect with a significant fall in the skilled manual group, although here, numbers rise - the fall is proportional, and attributable to the rise in unskilled workers. Furthermore, the growth of the capitalist form of production, as well as leading to an increase in the semi- and

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[112] Figures for tables 4.9 and 4.10 are for heads of households. This could over-estimate the higher status groups on the grounds that heads of households are likely to be of higher status than their children, for instance, owing to the former usually being older and better established in an occupation. This inevitably means that the upper non-manual group is slightly over-estimated and the unskilled group slightly under-estimated where there are several occupations represented in a household.

[113] Perth was not a heavy manufacturing town - its industry lay with the railway companies, which employed at certain times up to a third of the male workforce, Pullar's textiles and dye works, and the distilleries of Bell and Dewar. The main traditional crafts to continue were glove making, millinery and carpentry (Findlay, 1984: Stavert, 1985).

unskilled factory worker, also saw a rise in the service and professional sectors of the economy - the administrators and financiers of capital, and the servants and tradesmen of the growing middle-class. This is evident from the rise in the lower non-manual social-status group in both cities, although most prominent in Edinburgh with its large commercial and administrative base. Curiously the highest status group falls in proportional terms in Edinburgh - although rising in absolute terms. This is a consequence of a dilution of other social groups growing at a faster rate.

The maps of status groups distribution in Edinburgh reveal a number of patterns, some of which show a relationship to the earlier density maps.[114] For instance, over time there is a growth in the higher social status groups in the southern suburbs of Edinburgh - the area of low density. Similarly, the New Town shows consistently over time high levels of non-manual households, again suggesting a link between high status and low population density. Conversely, the suburbs show low levels of manual households. The unskilled group dominates the Old Town throughout the period: this is an area with very little high social status households. The industrial areas around the west end show moderately high levels of skilled workers, but this group tends to dominate in a few key areas by 1891. This indicates perhaps spatial specialisation or even polarisation. The more mixed picture in 1851 is replaced by a pronounced polarisation by 1891. Could this be how Edinburgh was experiencing socio-spatial change?

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[114] The maps do need to be viewed with a little caution. Parish boundaries might under or overestimate the true extent of status distribution as larger parishes may cover many socially distinct areas. Moreover, in order to calculate social group representation in each parish only a sample of EDs were used. This is for two reasons. First, no data exist in the census for social groups (or occupation) other than at the ED or city level. Second, to include all EDs in each parish would have been prohibitively time consuming as there are over fifteen hundred EDs in Edinburgh by 1891. The sample of EDs represent about twenty percent of each parish and were chosen systematically by taking every fourth ED. The use of parishes in a town of Edinburgh's size might be considered comparative to using EDs in Perth. However, the fact the areal units differ is far from ideal. Nevertheless, as broad guides to socio-spatial change within the burghs, the maps are of some worth.

Figure 4.17 Upper non-manual status group distribution: Perth 1851 -1891

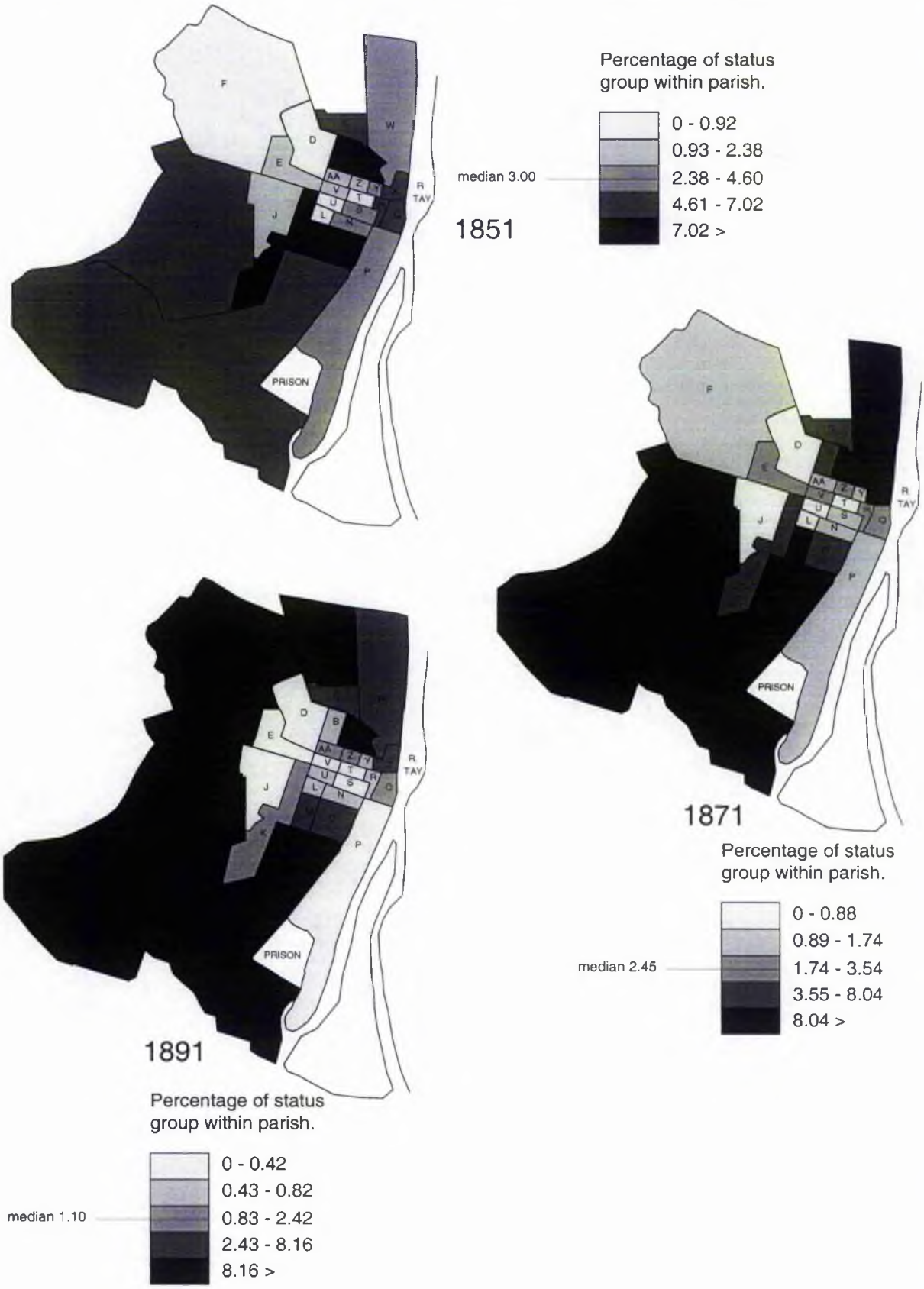

Figure 4.18 Lower non-manual status group distribution: Perth 1851 -1891

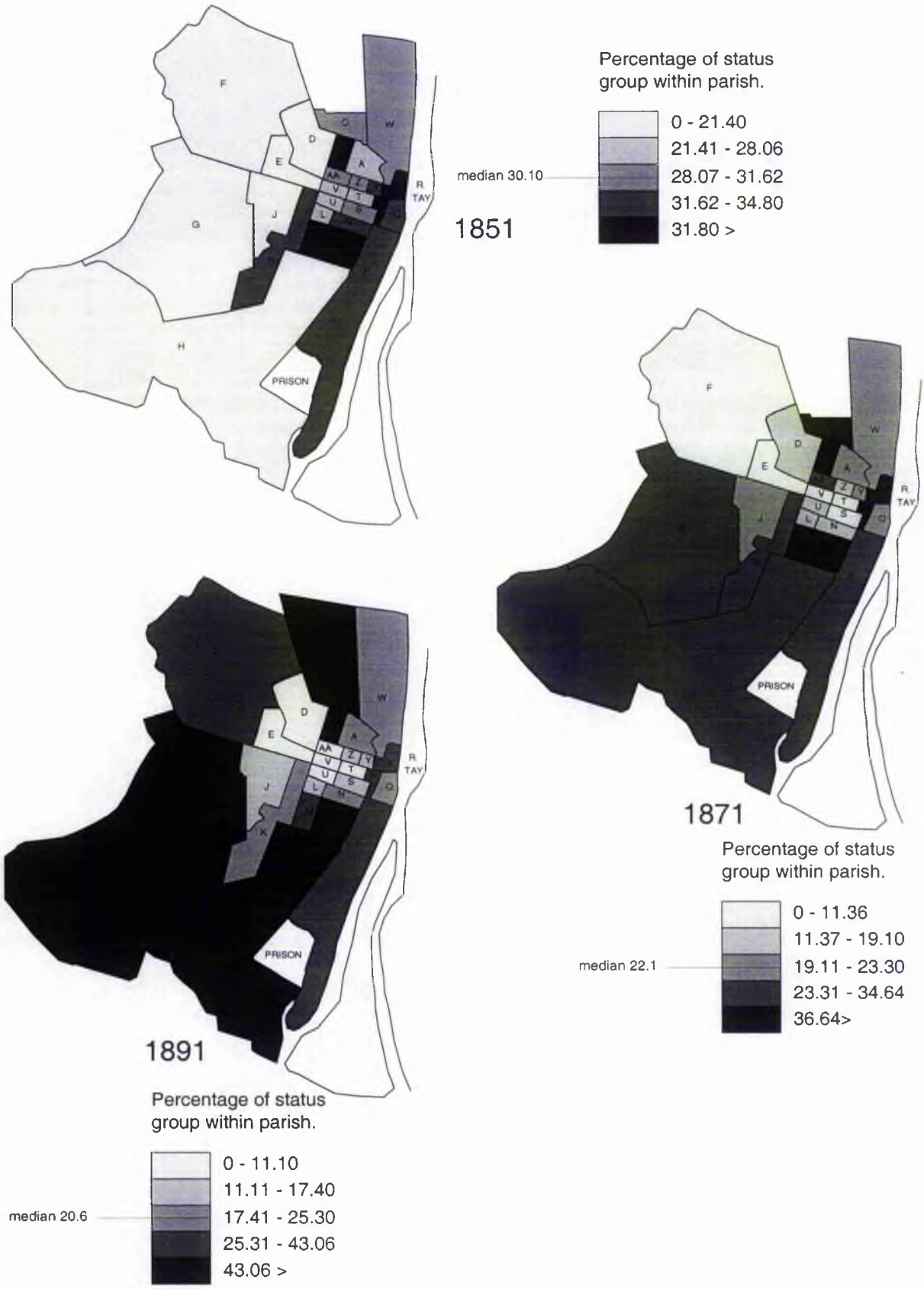

Figure 4.19 Skilled manual status group distribution: Perth 1851 -1891

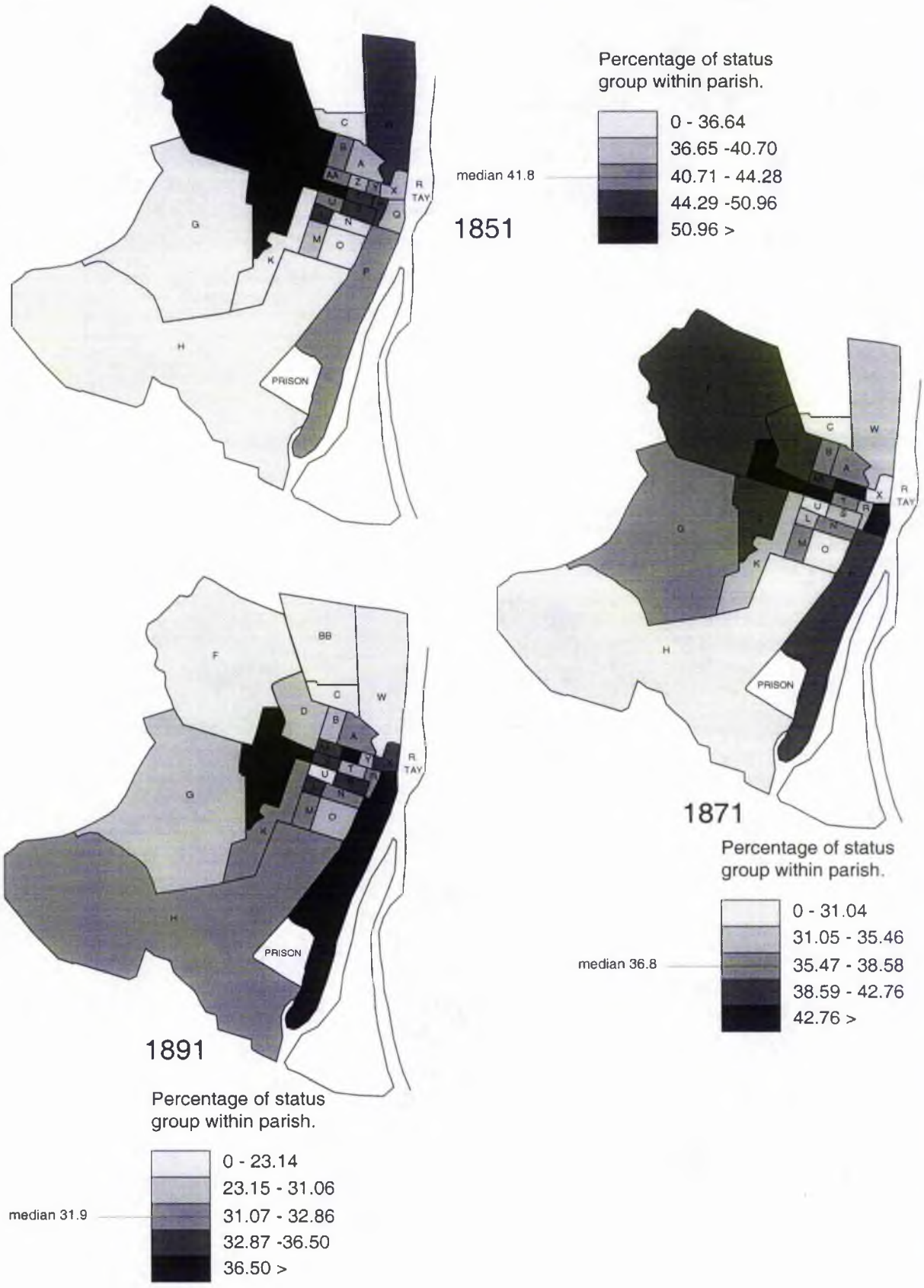

Figure 4.20 Unskilled manual status group distribution: Perth 1851 -1891

Perth shows similar trends to that of Edinburgh, figures 4.17 to 4.20, also suggest links between high status and low population density but also that a socio-spatial polarisation is occurring. The highest social groups in Perth thoroughly dominate the peripheral EDs by 1891. This is in stark contrast to the position in 1851 when they were dominant in a number of central EDs. Conversely, the lower social groups are highly dominant in the central EDs by 1891, after showing considerable dominance in the then, rural peripheral EDs in 1851. There has seemingly been a wholesale shift in the population. Furthermore, by 1891 social groups such as the skilled manual are dominating only a few areas. Could this be a result of the structural changes in Perth - a growth of the middle class sector (service and professional classes) and of the unskilled factory workers (as a result of the industrialisation which did occur)?

The social status distribution maps therefore further suggest what the population density maps had indicated, an industrialisation and suburbanisation process within the two burghs. But also, and perhaps more significantly, a polarisation of the social groups. Suburbanisation in itself is often enough to indicate social polarisation of the middle classes and is perhaps the result of the rise in the service and professional sector, a factor which may influence class consciousness, which itself could influence socio-spatial polarisation. However, like the population density maps, the social class distribution maps are too broad to make secure conclusions. If socio-spatial change was occurring in Edinburgh and Perth as a result of the structural changes and agency response, then this must be considered in more detail. This can be problematical. How does one measure polarisation? Moreover, how does one define it?

4.5 SOCIO-SPATIAL POLARISATION

In turning to the more detailed examination of socio-spatial change in Edinburgh and Perth, the question of whether society was becoming more polarised spatially is the primary concern. From the maps in the previous section there seems to be an indication of areal polarisation - this now needs to be extended to assess the socio-

spatial aspect of this polarisation. In other words, until now, there has only been an overview of spatial change, and what is required is more detailed evidence. The maps of Edinburgh and Perth both suggest a polarisation; the precise form this took needs to be considered.

The first difficulty with the more detailed analysis of socio-spatial change is how to identify polarisation. A useful way to do this is by using the term 'residential differentiation' - differentiation or segregation of groups according to place of residence. The main reason for using this term 'residential differentiation' lies not only in the fact that data are readily available about households and social-groups, but also that housing made up, by far, the largest component of the city and societal changes were certain to affect the demand and supply of housing and therefore the socio-space of the city (see Short, 1996). Furthermore, place of residence throughout the nineteenth century became a major status symbol (Gray 1973; Gordon, 1979; Cannadine, 1998). This fact was likely to mean that choice of residence became bound with an agent's perceived place in society. As such, residential differentiation is inter-changeable with social differentiation and implies population mobility, housing market activity and class consciousness. Thus, the structure / agency activity is evident within the process of residential differentiation, which means that using residential differentiation as the specific manifestation of spatial polarisation fits well with the conceptual framework of this thesis, as well as providing a useful area of empirical analysis to extend the under-standing of socio-spatial change. The question of enquiry thus becomes, how can the extent of residential differentiation be assessed?

Massey and Denton (1988) have a scheme which uses five dimensions to understand the term 'residential segregation' - this, in itself, demonstrates the complexity of the term. The five dimensions seek to assess different forms of differentiation. Of the five dimensions they identify, two have been chosen for use in this thesis, the two most relevant to the question of socio-spatial change, namely 'evenness' and 'exposure'.[115]

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115 For a fuller discussion refer to chapter three.

Evenness assesses the departure from an 'ideal' distribution of two or more social groups across the whole city. Thus, evenness is concerned with all social groups in all parts of the city. An even distribution would mean each component areal unit within the city would have an equal number of social group households and that this number would be equal to the city-wide proportion (Blau, 1977).[116] An uneven distribution would occur if social groups did not share residence within a component areal unit.[117] A change in residential evenness would imply a dynamic force changing the distribution, this might include the housing market mechanism, or a growth in class consciousness, although this cannot be concluded solely from the indices used to measure evenness and further analysis is therefore necessary. Nevertheless, these dynamics, especially if class consciousness is a factor, would imply a change in the levels of interaction between the groups socially. But does such a decline in social interaction manifest itself spatially? Using evenness as a dimension for residential differentiation cannot quite answer this as it measures distribution. As a result, the dimension of 'exposure' is used in conjunction with evenness in order to examine the probability of two social groups sharing an area of residence. Residential exposure is maximised if a social group was exclusively in one areal unit - it is exposed, *vis-a-vis*, other social groups. The choice of evenness and exposure therefore allows an assessment not just of the differential distribution of social status groups across the burgh, but also the levels of spatial interaction amongst them. This is important as it means that some indication of the dynamics driving the socio-spatial change will be discernible.[118]

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116 Alternatively this can be expressed as the percentage of a particular group within the city which would have to change residence in order for evenness to be maintained. The higher the percentage, the higher the departure from evenness, and hence the higher the social segregation of a status group from the other groups.

117 For instance, in a city with four areal units and four social groups: if each group lived exclusively within an areal unit, this would be considered an 'uneven' distribution and residential differentiation would be maximised.

118 Three other dimensions of residential segregation were noted by Massey and Denton (1988). These were centrality, clustering and concentration. These dimensions are concerned with individual groups or selected areas within the city (such as the centre) and as such more suited to studies of ghettoisation, ethnicity or central area dominance.

Evenness and exposure are both measured using indices. In the case of evenness these are the index of segregation and the index of dissimilarity. The former is an index of the departure from the 'ideal even distribution' or conceptually, the proportion of a social group which would have to move residence to achieve an even distribution across the burgh. Thus, the index of one social group may be contrasted with the other three. The dissimilarity index again measures the departure from an evenness, but does so by considering the dissimilarity between two groups only, for instance upper non-manual to lower non-manual. This allows an assessment to be made of which groups were most polarised from each other: those with the highest index, are most polarised (see below).

The exposure dimension also uses two indices: the index of interaction and the index of isolation. The former measures the probability of a member of one social group sharing an area with a member of another social group. The latter is the reciprocal of this, that is, the probability of a member of one social group sharing with someone from the same social group. When the isolation index is low (and the interaction index high), polarisation must be low as it implies that social groups are fairly mixed (Lieberson, 1981).

The four indices considered together should allow sufficient evidence to be accumulated to assess the levels of residential segregation. However, one significant factor immediately surfaces. In order to calculate the burgh indices, each component areal unit's individual social group percentage needs to be known. Social group percentage is derived from occupational data for the census. This information is only available at the enumeration district level and, hence, this must be the areal unit used. For Perth this does not prove problematical as there were only thirty enumeration districts, Edinburgh however had fifteen hundred. The sheer number of EDs means, for the moment, Perth alone must be used as a case study. As the interest is to identify the type of socio-spatial change, using just Perth should not prove too limiting.

Table 4.11 Segregation Index for Perth: 1851, 1871 and 1891:[119]

Socio-status group	1851	1871	1891
UPPER NON MANUAL	36.64%	41.6	54.6
LOWER NON MANUAL	20.5	24.0	37.5
SKILLED MANUAL	12.21	11.5	16.71
UNSKILLED MANUAL	9.69	21.38	29.94

Calculations made using data from the Census Enumerators' Report for Perth, 1851, 1871 and 1891.

Table 4.11 shows the calculated indices of segregation for three census years for each of the social groups. To interpret the results it is important to remember that one social status group is indexed against the other three. Thus, the segregation index for the upper non-manual group is an index contrasting this group with the other three. In 1851, 36.64% of the upper non-manual group would need to move residence for there to be residential evenness. As this is much higher than the 9.69% of the unskilled manual group, the former can be said to be more polarised from the other three groups. The index of dissimilarity below allows identification of which social status group, in particular, the upper non-manual group is most polarised.

The higher the percentage figure in the table above, the greater the polarisation. Thus, over time, the levels of polarisation can be assessed. The broad conclusion is that polarisation increases, some groups experiencing faster polarisation than others. The unskilled manual group show a threefold increase in polarisation - this may be indicative of increased class consciousness (fewer members of 'higher' social groups desired to live close to the 'lowest' social group). When this fact is considered in the light of the social status distribution maps, it makes more sense. The maps indicated an increased polarisation of the unskilled group in Perth, as they become dominant in a few key areas. In the same manner, the maps also showed very high dominance of the upper non-manual group in certain areas. This is in line with the high index revealed in table 4.11.

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119 The calculations may be found in the appendix.

The index of dissimilarity below shows the extent one social group is segregated from another. This allows a further assessment of whether residential differentiation was increasing over time, but by slightly different means. The principal benefit of using the index of dissimilarity in conjunction with the index of segregation is that the latter can sometimes be skewed if two social groups are closely associated. With just four social groups this should not prove a problem, nevertheless, the dissimilarity index allows for individual assessments.

Table 4.12: Indices of Dissimilarity for Perth: 1851-1891:

Socio-status group	1851	1871	1891
Upper non-manual to lower non-manual	26.32	30.19	36.17
Upper non-manual to skilled manual	40.84	44.69	61.16
Upper non-manual to unskilled manual	39.18	49.89	66.36
Lower non-manual to skilled manual	21.69	23.10	35.60
Lower non-manual to unskilled manual	22.08	30.74	45.50
Skilled to unskilled manual	8.67	16.91	16.60

Calculations made using data from the Census Enumerators' Reports for Perth, 1851, 1871 and 1891.

The higher the index the more likely residential differentiation was taking place. In all cases between 1851 and 1891 there is an increase in the level of polarisation between each of the groups.[120] This polarisation is especially marked between the groups furthest apart socially. This again relates to the status distribution maps: the areas highly dominated by the unskilled manual, were, generally, furthest from those areas dominated by upper non-manual households. It can therefore be suggested that social polarisation and spatial polarisation were becoming increasingly inseparable. The processes responsible for this cannot be identified through the maps or indices, but are likely to include increased class consciousness since the classes are growing apart spatially suggesting a desire for residential separation.

Although the two indices suggest a growth in socio-spatial polarisation, there are some considerations of their usage which need to be addressed. Neither the index of

[120] There is a slight decline in residential dissimilarity between the skilled manual group and the semi- and unskilled manual group between 1871 and 1891. This is attributable to the absolute decline in the number of skilled workers within Perth by 1891.

segregation nor the index of dissimilarity take into consideration the population distribution therein. For instance, it is possible that, in a given ED a particular social group was located in one corner, and in a neighbouring ED the same social group clustered in an adjacent corner. If the ED boundaries were redrawn so the whole of that social group was in one and not two EDs, this would affect the overall city-wide index. The ED boundaries and the population distribution therein are significant factors which affect the overall indices. Moreover, the number of EDs involved in the calculation also affects the index.[121] Thus, it must at least be recognised that the indices calculated above might actually understate the true level of polarisation because of these boundary and distributional factors.[122]

A further criticism that has been made about the indices of dissimilarity and segregation is that the size or scale of the ED will affect the index (Woods, 1976).[123] There is little that can be done to overcome this, as EDs are 'arbitrary givens': but this can count in their favour as it counters charges of areal unit manipulation by the researcher. Furthermore, if the areal units of analysis remain consistent over the study period in question, at the very least it can be suggested that polarisation increased overtime based on using these units. Thus, the level of segregation may slightly over- or under-represented, but that a change in segregation occurred can be concluded. For the analysis of Perth, the same EDs are used for the all three years considered and, apart form the addition of a new ED in 1891, the number of areal units remains the same.

Can the indices of segregation and dissimilarity adequately reveal a change in the social status pattern of Perth and thereby its socio-space? The difficulty with this question is at the conceptual level. In order to answer positively, one needs to be

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121 The extent to which this will affect the overall index is subject to dispute (Tauber and Tauber, 1965).

122 This is reason enough to make use of more than one index and to use two dimensions of segregation. This makes conclusions about socio-spatial change securer, and allows a wider conceptual discussion about the dimensions of segregation which can take into account structure and agency activity (see below).

123 Doherty (1989) also discovered wide variation in the dissimilarity index between streets, wards and one kilometre squares.

prepared to accept that evenness, as a dimension of social space, is itself adequate. Why use evenness? Why not, for instance, consider socio-spatial change using the dimension of concentration with its related measurements? The ideal research would use a combination of all the dimensions of socio-space identified by Massey and Denton, (1988). In reality this is problematic. At the practical level, the data required for some of the measurements are not always easily available. The data sources are limited and one is bound to work within these limitations. Concentration and centralisation are difficult dimensions to measure. They require detailed areal measurements which are not easily obtained. Moreover, clustering is associated empirically with spatial concentration and centralisation, (Massey and Denton, 1988) and would have similar drawbacks. It is usually employed for ethnically based studies (Lieberson, 1980).

Relying on one dimension of residential segregation is dangerous because of the methodological shortcomings each of the dimensions have (Massey and Denton, 1988). To gain a securer conclusion about socio-spatial polarisation therefore, other dimensions of segregation should be employed. The concept of residential exposure, in conjunction with evenness, allows analysis of the extent one social group confronted another. An advantage using exposure indices is that the distribution of a population within an ED will not affect the overall index, but as with the indices of evenness, the scale and number of areas of analysis can impact upon the result and therefore interpretations must be made with caution.

The difference between exposure and evenness lies in the fact that the exposure measures take into account total city population and the social-status composition within. Moreover, any change in the total population of the city (or component parts thereof) affects the isolation and interaction indices.[124] Furthermore, while indices of evenness measure a departure by social groups from an ideal city-wide distribution, the

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124 This usefully allows a comparison with different dimensions of residential differentiation. The concept of exposure covers meso- and micro-analysis simultaneously as changes to meso- and micro-area population are used in the calculation.

indices used to measure residential exposure indicate the probability that an individual from one social group shares an area with an individual from another social group. Table 4.13 below shows the calculated indices of interaction and isolation.[125] These indices do not allow for comparisons between individual social groups which is a major drawback, but the index of dissimilarity has already done this.

The use of isolation indices with interaction indices is not superfluity. The former are used to safeguard against one of the chief criticisms of the interaction index, namely, the difficult of interpretations when small numbers of involved, such as with the upper non-manual social group. High exposure would be experienced by members of this group because they are so few, relative to the other social status group within Perth. Yet, asymmetrically, other groups will have a low exposure to the upper non manual group for the same reason. To overcome this problem isolation indices are used in conjunction with interaction indices as the former highlights the likelihood of two members of the same social group sharing a residential area. If this increases, polarisation is said to increase (Massey and Denton, 1988).

Table 4.13 The Indices of Interaction (xP^*y) and Isolation (xP^*x) for Perth, 1851, 1871 and 1891:[126]

	Interaction xP^*			Isolation xP^*x		
	1851	**1871**	**1891**	**1851**	**1871**	**1891**
UNM	0.94	0.92	0.89	0.06	0.08	0.11
LNM	0.75	0.71	0.61	0.25	0.29	0.39
SM	0.54	0.59	0.67	0.46	0.41	0.33
SUM	0.67	0.61	0.53	0.33	0.39	0.47

Indices calculated from returns of the Census Enumerators for Perth, 1851,1871 and 1891.

When the interaction index is low, polarisation is high. This is because a low index of interaction suggests a low probability of sharing an area with someone from another

[125] Both indices were designed for comparison between a majority and minority (ethnic) group. However, if there is more than one minority group, it is possible to use these indices (Lieberson, 1981), and it is after this approach that the indices are used here for a comparison of four social groups.

[126] The calculations are presented in the appendix

social group (and so a higher probability of sharing an area with someone from the same group, and hence polarisation). This can be illustrated using the upper non-manual group. This group's interaction index declines over time (and their isolation index increases). This suggests a lower probability of sharing an area with members of other social groups, and a higher chance of living with members of the same social group. In three of the social groups above, the trend suggests a growth in polarisation. However, the skilled manual group index reveals that, over time, a member of this group is more likely to live with a member from another social group. This would suggest a decline in polarisation. This is not easily explained, but might have something to do with the fact that the skilled manual group in Perth had declined considerably in absolute terms and this means there are fewer members of this group with which to share an area.

The reasons behind this increased polarisation action cannot be concluded from the above table, but it can be postulated from what had been evinced from the maps and other indices that the socio-spatial change is likely to have been the result of population mobility, increased class consciousness and the operations of the housing market - in other words, structure / agency interaction. Although this cannot be convincingly confirmed from the data available in calculating the indices and maps, the postulations do at least allow a furnishing of a research argument. These factors of the socio-spatial change are discussed in more detail in chapter five.

Care must be made not to make too many conclusions from limited information that can be gleaned from the maps and indices. Nevertheless as overviews of socio-spatial change they are useful. There are several problems associated with their use however, some of these have already been rehearsed in relation to evenness measure, but there are several shortcomings of exposure indices which need to be briefly outlined. A difficulty with interaction and isolation indices lies in the fact that it is isolation of one group from the other three, rather than one other group. This means identification of the difference between two groups is impossible and, hence, why they should be used

in conjunction with the index of dissimilarity which provides a breakdown between each of the status groups. Furthermore, with only four social status groups analysed the indices may miss some of the nuances that existed within and between groups. Moreover, in some cases there was considerable overlap between groups. For instance, where is the dividing line between upper and lower non-manual, skilled and semi-skilled labourers? If the overlap is between two groups is large the indices would be lower, suggesting less polarisation. Some account should be taken of this. Perhaps with more groups this could be overcome, as greater accuracy and less overlap would result. However, further problems arise with identifying social groups, some individuals may have multiple identities, and social groups became more fluid towards 1900.[127]

A final limitation regarding all the indices lies in what they are measuring. Each uses the social status typology that has been constructed using official census reports. Alternative ways of classifying social groups, using more categories, say, are likely to alter the index. Thus, how one defines social status is crucial. This was considered in chapter three, and in the following chapter the problems associated with class and social status analysis are discussed further. For the present, the most important element of the social status compositions for this research is that they are consistent over time and between settlements.

On the whole, the indices of interaction and isolation confirm what the indices of segregation and dissimilarity revealed, namely, that socio-spatial change in terms of residential differentiation had heightened over the period 1851 to 1891, reflecting perhaps, *inter alia*, the growth of class and social group distinctiveness.

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[127] Furthermore, Lieberson (1981) identifies problems comparing the indices of exposure with other measures. However, this is not to be attempted in this thesis, and the use of exposure indices is confined to a confirmatory role, used in conjunction with evenness indices and chi square analysis.

Despite its relative lack of industrialisation and its loss of position in the urban hierarchy of Scotland, the evidence above suggests that, Perth did experience an increase in the spatial polarisation of its social groups during the last half of the nineteenth century. It can thus be expected that Edinburgh, already the much larger and more complex urban settlement by 1851, would have experienced even greater residential differentiation over the same period. Was this so? Unfortunately time constraints mean that a detailed analysis of residential differentiation cannot be undertaken for Edinburgh owing to the enormous number of EDs. Given this limitation, use can be made of a number of surrogates which point to socio-spatial change.[128] It has already been seen how population change, in terms of in-migration and population growth, affected the social composition of Edinburgh, and that the employment sectors were also changing in line with the compositional change. Furthermore, the distribution of status groups has mapped along with changes to population density which indeed reveals considerable changes over the period 1850 - 1890. This is taken as indicative of socio-spatial change but some uncertainty remains. Thus, in the next chapter the micro-study of individual areas seeks to add weight to this assertion.

4.6 CONCLUSION

This chapter has sought to advance the understanding of the socio-spatial impacts of structural change. In this concluding section, the success of this advance is briefly assessed in the light of the empirical work carried out. Two advancements have been made in the understanding of socio-space. The first, concerns the inter-relationship there exists between macro-scale change and meso-scale change. The second concerns the manner that socio-spatial change took within the burgh.

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[128] The three surrogates mention are considered earlier in the chapter and were chosen as they most usefully suggest how macro-changes affect the burgh. Moreover, the data for them are easily obtained and generally considered reliable.

The first section of this chapter outlined the broad macro-scale spatial changes within the Scotland. The conclusion that the western burgh, and those industrialising fastest, were gaining in prominence was not a new discovery. However, attention turned to the impact that these macro-scale changes had on individual burghs. A number of interesting factors emerge. Structural changes were considered using three variables - population growth, economic sector change and in-migration. These, it was argued are part of the national structure / agency interaction. For instance, agents migrated in response to the growth of capitalism and the perceived opportunities this had within certain settlements. Using the three variables, a selection of burghs from each part of Scotland identified several changes. Amongst these changes were high population increase, growth not only in industrial sectors of the economy but also the service sector, and high levels of in-migration to most settlements, although this was higher in industrial burghs. Furthermore, from the limited evidence presented in the macro-scale section of this chapter, it can also be tentatively concluded that a burghal specialisation was increasing. Dundee was almost entirely industrial (losing its former fishing and agricultural sectors); Glasgow became a specialist in heavy industry; while Edinburgh was becoming a centre for administration (as testified by the high growth in service and professional sectors). Thus, industrialisation (structural change) was affecting burghs differently, although distinct trends were discernible.

Armed with this knowledge the question of the spatial impact of these changes was then considered. This was done using Edinburgh and Perth, in one sense to fill a research gap existing on these settlements, but in another sense to advance the proposition that socio-spatial change in non-industrial burghs would be high. This is to recognise that change was more than industrialisation.

In order to assess any spatial change in Edinburgh and Perth, two sets of maps were produced. Population density and social status distribution maps were able to furnish the discussion with evidence of spatial change. Although both sets of maps were

generally broad and overview of change was provided and questions were prompted to assess further the precise form the suggested socio-spatial change was taking. Thus, the relationship between structural change and socio-space change seemed to be evident, but what was needed was knowledge of the from this took.

Socio-spatial change was considered by using the concept of residential differentiation. By using two dimensions first advanced by Massey and Denton (1988), indices were calculated from which an assessment of the level of differentiation could be made. The limitations and shortcomings of the method used were explored and the interpretation was seasoned accordingly. However, the conclusion that all the indices seemed to point to was that, in Perth at least (data limitations meant Edinburgh could not be assessed), residential differentiation was increasing. Of course, using just one settlement can be considered dangerous: to what extent is Perth representative? In many ways it is unrepresentative of Scottish burghs in the late nineteenth century. It was small, population growth was checked, the industrial base was low, it had a small proportion of migrants and it maintained its traditional role. Change here was seemingly limited. As such the inclination is to assume spatial change would also be limited. This did not seem to be the case. Thus, it can be postulated that if the limited socio-economic change in Perth had such far-reaching spatial change, surely this indicates greater spatial change in other, more dynamic, settlements. This is one aspect of the present research which would benefit from future, comparative studies, although the detailed examinations of Edinburgh which follows in the next chapters goes some way to satisfy this.

Nothing is therefore claimed about any other burgh, other than Perth. This is a shortcoming of the research, but an inevitable one. Furthermore, the conclusions drawn in this present chapter concerning socio-spatial change are made in the light of the data limitations addressed in this chapter. Nevertheless, the evidence accumulated both in Edinburgh and in Perth does allow a conclusion that the socio-spatial change that was

evident as a result of structural changes was taking the form of increased residential differentiation.

This conclusion has prompted some speculation regarding the dynamics and processes within the city bringing about this form of socio-spatial change. The maps indicated that density of population was increasing in certain industrial and peripheral areas. This suggests suburbanisation and industrialisation, but also population movement. Moreover, suburbanisation connotes a deliberate residential separation of social groups. Thus, it cannot but be speculated that structure / agency interaction seems to be at work within the city, creating the socio-spatial mosaic. This could provide the answer to what was going on in the city to increase residential polarisation.

In fact, in order to assess properly what was occurring within the city changing the socio-space, a detailed survey of the factors of change needs to be undertaken. The component parts of the city are important in this respect. Thus, the housing stock and the housing market could prove crucial in precipitating change, especially in the economic and political interaction of agents acting within the housing market in terms of allocation and authority of the housing stock. The growing population in the city would also be an enormously influential factor of change. In a period of increased specialisation of occupation (due to industrial capitalism and labour specialisms), the divisions in society were growing. This would be exacerbated by the growth in the middle class. These factors would heighten class awareness which structured individual decision making in matters such as residential choice. The growth of the middle classes would also bring in a rise of consumerism and a change in aspirations and values, again influencing socio-space.

Thus, what has become clear in this conclusion is that there were many factors within the city which may have contributed to the socio-spatial change that has been noted in Perth and Edinburgh. These factors hold the key to the explanation of change, as such they need further examination. In the following chapter, the understanding of socio-

spatial change is therefore advanced to assess change in terms of the structure / agency interaction within the city. This necessarily means that the scale of analysis must now become more detailed.

CHAPTER FIVE

SOCIO-SPATIAL CHANGE IN EDINBURGH AND PERTH

5.1 INTRODUCTION

The analysis of the previous chapter indicated that the last half of the nineteenth century saw increasing socio-spatial polarisation within two of Scotland's urban settlements. The analysis examined the residential structure of Edinburgh and Perth at the meso-scale and noted several limitations in doing so. This chapter complements chapter four: the factors that were driving the socio-spatial changes are identified and examined in order to advance the understanding of structure and agency interaction at the meso-scale and to help overcome earlier limitations before analysis moves to the micro-scale.

The housing market, class consciousness, consumerism and institutions are the four factors of change outlined and used to advance the explanation of what is now known about socio-space within Edinburgh and Perth, namely, that residential segregation was increasing. The analysis of these factors deliberately focuses on the meso-scale structures and structural changes and the meso-scale agency activity. For instance, the operations of the housing market are considered along with the action of urban gatekeepers therein.

Although it is meso-scale structural factors which are examined in the first part of this chapter, it is recognised that there is a myriad of individual decisions being made throughout the city. The detail of these agency factors in socio-spatial change are examined in chapter six, however, in order to understand an agent's role in socio-spatial change. The second half of this chapter provides the context in which agents' decision making and actions took place. The micro-scale context within which the

majority of agents act, it is argued, is strongly related to the meso-scale factors outlined in the first part of this chapter. This will be demonstrated with the use of specific examples.

To achieve a greater understanding of how the structural changes at the meso-scale were affecting the micro-scale, small areas in Edinburgh and Perth are selected based on contemporary perceptions of areas within the burghs in the late nineteenth century (see chapter three). It is important that the areas be representative and different from each other in order to have as full as possible coverage in the analysis. The point of considering micro-areas is to help explain how agents experienced change, as micro-areas can be identified as locales, the arenas of interaction, and thus provide a context for the detailed analysis of chapter six.

There are three stages to the analysis of the micro-areas. First, the chi-square statistic is employed to identify the extent to which social status groups within micro-areas are polarised from each other with respect to the city as a whole. Thus, the levels of over- or under-representation are calculated and graphed or mapped for the selected EDs. This links the meso-scale indices of differentiation, which indicated polarisation at the end of chapter four, to the actual micro-scale polarisation of each of the EDs which together established the index.

Once the polarisation within the micro-areas is firmly established, attention focuses on how the meso-scale factors of change influenced change within micro-areas. Using a number of contemporary sources, but in particular the Sasines, valuation rolls and Post Office directories, the extent of physical and morphological change is gauged in each micro-area allowing a brief consideration of the effects of capital flows. Further, the ways in which the housing market, industrialisation and class consciousness impacted in selected micro-areas will become apparent. Finally, to complement the previous meso-scale analysis which concentrated on the structural factors driving change, a contributor statistic, based upon the index of interaction, is introduced which acts as a

broad guide to the levels of agency activity in terms of social status group composition within the EDs relative to the burgh as a whole. Changes to the contributor indicate changes to social status of an and area and is suggestive of mobility. This will lead into the more detailed survey of agency factors driving change within the burgh and herald chapter six.

5.2 FACTORS OF SOCIO-SPATIAL CHANGE

Timms (1971) was one of the first writers to use the term 'urban mosaic'. It describes the city as a picture of smaller pictures. This remains a useful way of describing the relationship between meso-scale and the micro-scale space. In the previous chapter the broad outline of the mosaic was painted and consideration of the change over time led to the conclusion that the burghs were becoming socio-spatially polarised. An extrapolation of the conclusion drawn at the end of the last chapter to the present one would suggest that the micro-areas within Perth and Edinburgh were also becoming socio-spatially polarised. By examining the changes to the socio-space of the areas that make up the burghs, the influences of socio-spatial change within the burgh can be identified. This also establishes the nature of the link between meso-scale and micro-scale change.

In what follows the factors driving meso-scale socio-spatial change are considered in some detail. Specifically, the structural changes and agency action at the meso-scale are outlined. This advances the understanding of the socio-spatial polarisation indicated in the previous chapter by discussing the principal underlying factors which were driving that change.

- THE HOUSING MARKET

The nineteenth century housing market catered for a large range of 'consumers' with a wide variety of 'products' from the luxurious to the basic (Rodger, 1995). With such a

diversity, those who controlled the market in terms of resources and governance - the so called urban-gatekeepers - used their position of power within the capitalist structure to secern effectively to create socially specific areas. They did so either by responding to the growing class consciousness or by helping to create it. At the same time, the gatekeepers' motivation was to maximise profits in a very discerning market.

The change in attitudes and values of individuals within Edinburgh from the beginning of the century to the end was radical. The oft-quoted example to illustrate this is that of the dowager Countess of Balcarres. She may have been content to have been sandwiched between a 'fishmonger and a crowd of tailors' (Smout, 1986, p.369) in an Old Town tenement in the early nineteenth century, but by the end of the century, she would have typically retired to a villa in the southern suburbs or a Neo-Classical townhouse in the New Town, the creation of which was a 'deliberate and dramatic step in the formation of ecological and social barriers [in Edinburgh]' (Elliott and McCrone, 1980, p.2). But what persuaded her to move? Was it the structural changes which would alter her sense of place, or was it the action and persuasion of the urban gatekeepers?

In fact it was probably a combination of both. The Dowager would have felt increasingly 'out of place' in the Old Town as it became more and more squalid and inhabited by a growing number of unskilled workers (see Gilbert, 1901). Her sense of being out of place is both social (not being able to relate to unskilled workers) as well as socio-spatial (the Old Town was now predominantly home to the unskilled, who brought a new status to the area). The Dowager may well have acted upon these feelings, perhaps doing so because of the growing distinction in society as a result of the new capitalist and class structures. Her own growing perception of being upper class and distinct from other classes meant that she wanted to move to an upper class area. Her perceptions may well have come from looking around her, but to a large extent, there were forces in Edinburgh which acted to increase such perceptions. The

consequence of such forces was significant spatial change in Victorian Edinburgh and Perth.

The changes to Victorian society brought about by technical innovations, consumerism, fashion, speech and lifestyle were seized upon by upwardly mobile agents, especially urban gatekeepers, to create social and spatial gulfs between the different classes (Newsome, 1997). But such a seizure would not have been immediate. It was the culmination of the growth of gentility which began in the late seventeenth century with the disappearance of Puritanism, and which was heightened in Edinburgh in the late eighteenth century by the creation of the New Town (Martin, 1961).[129] Yet the eighteenth century lacked the areal manifestation of societal division (Cannadine, 1998). This came in the nineteenth century with the structural changes embracing the rise of industrial capitalism, the division of labour, and rapid population increase. It was during the early years of the nineteenth century that the middle classes began to dominate urban governance, replacing the aristocracy as controllers and legislators. From the position of dominance they could then dictate the terms of entry into respectable society.[130] The land owner, or feudal superior, had an enormous amount of influence on what could be built on his land. He and the speculative builder were the two most prominent agents within the housing market whose action would affect socio-space. They did so using their position to control the resources of capitalist housing market and drawing on growing class consciousness.

The control of the housing market by the feudal superior was through the use of feuing conditions. These stipulated what was to be built, how dwelling units were to be constructed and the price. As such, the feudal superior could create large areas of middle class housing. Prices of dwelling units would be fixed to make them affordable only by the professional classes. The vast middle class residentiary tracts in southern

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[129] See Kostof (1985) and Langford, (1992).

[130] Land ownership remained an important consideration in nineteenth century Scotland not least because of the feudal system. The landowner was one of the 'gatekeepers' who could exert considerable influence in determining what, how and where certain houses and factories were to be built (Campbell, 1988).

Edinburgh which epitomised Victorian suburbia is an example of the use of feudal control. Those wielding power within the capitalist market structure had most influence on the socio-space of the city. Such influence played on the feelings of agents and often helped to develop the heightened class consciousness.

For example, in the 1860s Sir George Warrender, Bt, the feudal superior for most of the area of Marchmont, feued a large rural acreage of his land. His first inclination was for detached villas to attract a 'better class' of resident to his estate, but he abandoned this when the full implication of the profits to be made on 'superior' tenements was known. Laying down clear specifications on the building style and annual land rental,[131] he maximised his profits while attracting exactly the tenants he wanted to his area, namely the lower middle class. The middle class villas and grand tenements of Marchmont, the Grange, Morningside, and Mayfield were all generally built on land feued by landowners such as Warrender who were keen to maintain high status areas. Strict regulations were laid down in the feuing charters which made the building of speculative working class housing impossible.[132]

Investment builders, like the feudal superiors (and who would often feu land from a superior), would safeguard their investment by appealing to the growth in class consciousness amongst perspective residents, thus, for instance, excluding working class housing altogether from a particular area (Gauldie, 1979). This was usually done through the feu charter. Evidence from Mr A.C. Telfer to the Royal Commission (1885: 19,196) reveals that a large amount of land in Edinburgh would not be feued for workmen's housing: 'the feu charters provide that a certain class of property shall be built there, and offer any price you like, you would not secure it for workmen's homes'. This kept many areas exclusively middle class and heightened polarisation.

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[131] See the Register of Sasines, Edinburgh 1868, 13: 551; 1590: 190; 1609: 3; 1611: 155.

[132] Other significant land-owners and feudal superiors include the Bruntsfield Estate, the Falcon Estate and the Viewfield Estate: all in southern Edinburgh and all laid down similar feuing conditions to the Warrender Estates (Edinburgh Sasines, 1863-1869 *passim*).

In Perth, feu charters were less strict but still laid down tight specifications.[133] Attention was paid to the long term upkeep as well. Some land chartered from the Glover's Corporation to Captain John Littlejohn had feu conditions which insisted not only on model dwellings 'suitably stoned, limed and slated with a cost of at least £1000', but also on uniformity with surrounding houses (also feud by the Glovers) and proper care and attention paid to the upkeep and general cleanliness including the parapet walls and railings.[134]

By contrast, in the working class sector, speculators supplied the majority of artisan's dwellings. Most speculators were small-scale local builders, mason or tilers, generally under-capitalised, and their interest in such ventures lasted no longer than until the building was complete (Elliott and McCrone, 1980).[135] One such Edinburgh speculator was James Steel.[136] He speculated in four tenement blocks in Caledonian Crescent in Haymarket. These were tenements built for brewery and railway workers. Steel was canny and waited until economic conditions were right. Once railways and industrial expansion occurred in Haymarket and Dalry, Steel made his fortune. He went on to build other houses including most of Dalry, making huge profits through the working-up system (see below) and eventually moving to investment tenements for the wealthy in Edinburgh's west end.[137] Steel also bought up feus and thereby exercised even more

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[133] For instance, the feu charter drawn between Steel and Craig and McLeod (Sasines 19, April, 1876, 631:146) states that the dwelling houses (tenements) must not exceed four storeys in height and that only four houses must be built per floor. Another example exists in the charter of David Sutherland for tenement erection in Upper Gilmour Terrace. These were to be of superior quality and again no taller than four storeys. In both cases further details specify other regulations which would have added to the expense of building. As a result the feu charter was often disliked by the speculator (Rodger, 1979).

[134] Register of Sasines; Perthshire: 20 August, 1879: 158.72.

[135] This is a typical of much of the house building in Scotland during the latter half of the nineteenth century and is largely responsible for the cyclical nature of the building industry (Elliott and McCrone, 1980).

[136] James Steel started out as a humble mason, but rose to become one of Edinburgh's wealthiest men and Lord Provost. The Dean of Guild Register shows that, by 1894, he had an annual return of £80,000 on an initial outlay of £210,000. Many of his properties were feued from the estates of Colonel Learmonth in the Gorgie and Dalry districts beyond Edinburgh's west end (Rodger, 1979).

[137] Register of Sasines, 1886: 15; 18. See also The Scotsman, September 15, 1904; Obituary of Sir James Steel. Steel also created the tenements in Comely Bank which were 'out of town' residences. These were higher quality tenements than in Dalry and Steel could appeal to the growing aspirations of the skilled working class to rent these houses. Other notable speculators recorded in the Sasines include William Craig, who worked with Steel, J. Murray and James Clark. These men borrowed money from investment companies in order to build property, so assessing the right time to maximise returns was essential (Elliott and McCrone, 1980).

control over what could be built. The Valuation Rolls show Steel as the feudal superior of most of Caledonian Crescent by 1870 (see Rodger, 1979).

The speculator responded to two important considerations - economic conditions and the levels of demand. Since the *raison d'etre* of the speculator was profit, he built working class houses only in periods of economic boom, when profits could be made.[138] Moreover, the employment security of members of the working class, and therefore their ability to repay loans, mortgages and rents, was dependent upon national, or at least city wide, economic conditions. In essence, the working classes were susceptible to economic cycles in a way that the middle classes, generally, were not. This is not necessarily a universal truth, but it certainly was the case in Edinburgh and this is proven by the fact that the largest building projects of working class houses were built at buoyant periods in 1872-6 and 1893-1903 (Rodger, 1977).[139]

The speculators were the free-marketeers and benefited enormously from the feuing system in operation as an attractive and available source of capital in the expansion stage of the building cycle. Many speculative builders made a fortune due largely to the specific Scottish system. Evidence to the Royal Commission on Working Class Housing highlights this well. Although, as chapter three indicated, the use of the Commission Minutes must be viewed in the light of the official nature of the enquiry and the fact that many of the witnesses were biased in the evidence they gave. Notwithstanding, the Lord Dean of Guild gave evidence and explained to the largely English members how land can be 'worked up':

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138 In a study of the nationwide activities of speculative builders, Rodger (1979) discovered that there were definite periods of speculative building of working class houses (during economic booms) while middle class housing was generally built throughout the period 1851 to 1891 regardless of national economic fortunes.

139 Elliott and McCrone (1980, p.13) note that the working class buildings in the districts of Dalry, Gorgie, Tynecastle and Cannonmills were almost entirely restricted to the most buoyant years of the local economy.

> 'You said that the feu of this land of which you have spoken had gone up from £26 per acre to £250 per acre; will you describe how that increase takes place'. - 'There is a middle man, a builder, [speculator] who makes a venture of feuing from the superior at so much...the builder looks forward to the town increasing, and he takes up a lot of land from the superior for £50 per acre, and then by refeuing or building himself, he works it up to £200 an acre. That has been done within [Edinburgh] and large fortunes have been made out of it' (Royal Commission on the Housing of the Working Class, 1885: p. 28: 18,892/4).

The more a feu could be worked up, the more profitable the speculation could become. It was therefore incumbent upon the speculator to build as many properties as he could and to feu them out. This way, large areas became single status, as rows of tenements were built for the better off working class. This naturally impacted on the socio-space of the burgh.

James Hole (1866) a contemporary observer of the Scottish housing scene, comments that 'the poor are not always a desirable class of tenant; for they are troublesome, uncertain and changeable'. This attitude was certainly shared by others owing to the fact that builders responded to a demand by landowners as well as residents for 'single status' housing areas. Thus, Marchmont in Edinburgh became an area associated with high class tenements with prices kept deliberately high to exclude the poor: this policy worked. The census enumerators' reports show a breakdown of over seventy percent of householders in the Marchmont EDs from the non-manual social status groups by 1891.

It was this form of agency interaction within the housing market which served to intensify socio-spatial polarisation. New houses built in the southern parts of Edinburgh, and the Craigie area of Perth, were generally not available to or affordable by the working class. Therefore this group was relegated to living in the older, and

increasingly subdivided, properties of the Old Town and city centre. Moreover, the infilling which took place furthered the downgrading of these old parts of the burghs into slums. Gauldie (1979, p.19) perceptively comments that this process had the effect of a 'deterioration of a mixed-urban area into slum ghettos from which anyone with income or enterprise enough removed himself as rapidly as possible'. Thus, at one end of the housing market the poorest were excluded; at the other extreme the rich were excluded. This, put in terms of the social perceptions of the day, meant few middle class residents in Edinburgh's Old Town, and few working class residents in the new housing in the southern parts of Edinburgh. Hence, socio-spatial polarisation increased rapidly as agents were socially sifted by the processes of structural and agency interaction.

Edinburgh rapidly became segmented along class and status lines towards the end of the nineteenth century. This can be attributed to the considerable advance in class consciousness and the desire to be socially as well as spatially separated, but was also a result of the sheer growth in demand for housing. New housing, and infilling of old housing, became necessary as population grew, and houses could not be built quickly enough to satiate demand. The law of demand and supply dictates that when a commodity is scarce its value increases. This was true of the land market in Edinburgh, and helps to explain the rapidity of socio-spatial polarisation. Evidence of the effects of land prices on social polarisation was presented to the Royal Commission. Mr A.C. Telfer, a builder from Edinburgh, was asked what he thought was the chief obstacle to proper housing of the working class poor. He felt strongly that it was 'the high price of the land...[T]he feus in Edinburgh are so exorbitant that it becomes scarcely possible to build workmen's houses so as to pay'.[140]

With high land prices and feus it was uneconomic for a builder to provide working class housing as the return would not be sufficient to cover outlay and make a profit. However, speculators were not alone in providing working class housing. Other

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[140] RRC, 1885: 19,182/3

'gatekeepers' provided housing, sometimes with status motives, including employers and the co-operative or mutual societies, examples of which include the Edinburgh Co-operative Building Company and the Edinburgh Housing Association. One of the first such ventures was at Pilrig. The model dwellings here were the first of their kind and, as such, encountered a number of teething difficulties which were later criticised by the Royal Commission. Nevertheless they were built as the 'archetypal' respectable home for the working man and a short newspaper article provides an interesting insight:

> "The model dwelling houses for workmen were commenced in the neighbourhood of Leith Walk in the course of last summer are now very nearly complete and will be occupied by Whitsunday. The houses are of different sizes and the rents vary from £5 5s to £9 *p.a.* The total gross rental being equal to about 8% of the capital employed or 6.5% deducting expenses, feu duty &c. Although these rents are rather higher than are usually paid for the same amount of accommodation, yet the advantages of the situation and the superior quality of the houses are so evident, that they were keenly sought after by the workmen of the district and the rents asked were readily given. Indeed, for some of the houses there were no fewer than four or five competing applicants and many very deserving parties were disappointed. This affords great encouragement to the committee to extend their applications as well as to other parties who may be inclined to commence similar undertakings in other districts". (Edinburgh Courant, Saturday 15 February, 1851.)

This article shows the early signs of differentiation, as the high rents asked are deliberately designed to make the area 'respectable'; nevertheless demand for such property did exist. Structure / agency interaction is highlighted well by the actions of the Pilrig Housing Association, who attracted residents to a particular location drawing on class consciousness and status differentiation which had grown out of industrial

capitalism. Thus, structures and agents (both the housing association and the tenants) interacted and the result was a socially exclusive area which heightened socio-spatial polarisation. Furthermore, the polarisation served to advance social differentiation and so reproduce the class structure. This is the recursive structuration process at work: agents subsequently acted within the reproduced class structure and so perpetuated the process.

There was also considerable paternalistic enterprise which demonstrated that there was an element within those supplying or influencing the supply of housing which reacted to the class structure in a different manner to most urban gatekeepers. Philanthropists acted in a way to benefit those sections of society who had little influence in the housing market. From this it can be suggested that there was more than self-interest in structure / agency interaction, and while it was not explicit altruism, paternalistic behaviour certainly meant a recognition that the poorest sections of society could not be left to market forces.[141]

There were, at least, three types of building going on in Edinburgh and Perth during the period 1850 - 1890: investment housing for the middle classes built constantly throughout the period, working class housing, built by speculators during boom periods in the economy, and co-operative housing built for 'deserving' artisans with a desire for betterment. Of course there was other house building, but three main sub-markets emerge. Sub-markets had the effect of creating distinct 'housing areas' which further differentiated social groups. Once established, segregated housing areas 'symbolised the status differences between white and blue collar, skilled and unskilled' (Elliot and McCrone, 1980 p. 20).[142] Furthermore, they provided the framework within

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[141] Some, however, might argue that was a considerable degree of self interest in paternalism in the form of control (see Nash, 2000).

[142] The housing market machinery had to provide for a market that was progressively becoming more differentiated along class and status lines. Such differentiation was articulated at different levels of income and different styles of life. It was inevitable that the housing market was to become variegated into several sub-markets which contributed to the complex socio-spatial mosaic. Elliott and McCrone (1980, p.20) confirm that this was the case. They state that the spatial segregation in Edinburgh resulted from class and status divisions which were 'emerging in its changing occupational base...and from the differentiation of capital and capitalist'. Of course the corollary to this is that the variegated housing market served only to exacerbate the already increasing social differentiation apparent in Edinburgh and

which future housing developments would create sharper differentiation and 'by restricting social contact, they accentuated rivalries, antipathies and snobberies, for which Scotland's capital is famous' (Elliot and McCrone, 1980 p 21).[143]

In sum, the operations of the housing market, acting as they did within the class and capitalist structures, not only reproduced those structures but were a significant meso-scale factor influencing the socio-space of Edinburgh and Perth. The economic and political power of gatekeepers allowed them to create socially specific areas, and to maximise profit. This was made easier by the growth in class consciousness and the growing 'placement' of agents within a social group. The power relations between house supplier and those demanding housing, as well as the growing awareness of one's position in society, was a result of the action of agents within the changing structures within society. But is this a fair assessment of what was happening? In order to answer this, the way in which gatekeepers used class consciousness needs to be evaluated. To what extent were gatekeepers able to play to other agent's ideals, values and class consciousness? In order to assess the levels of class consciousness in society, the ways in which house suppliers advertised their properties provide a useful insight. Furthermore, an examination of styles of life and consumption patterns helps to reveal the extent to which social distinction existed. This also demonstrates the ways in which agents continually used and were constrained by structures, not only in making decisions, but in living their lives.

- THE APPEAL TO CLASS

When a builder had been given permission to build a villa or a tenement block, say, unless he were building to order for an individual, the usual way to sell the property was through public roup, or auction, advertised in the local press and business journals.

Perth. Areas became associated with particular housing types which, in turn, were associated with particular social groups and this only heightened the differences between social groups and class.

143 This provides an interesting example of the recursive nature of the structuration process: future housing developments would be built based upon the sharper differentiations which resulted from previous action, and so on.

Similar advertising devices were employed to let property. Many examples appear in the contemporary press of all types of housing offered for sale or rent. Some advertisements were directed to specific groups. For example: 'cheap self-contained houses to let, £35 a year'.[144] Such an advertisement was designed for the artisan. It appealed to the growing desire of living 'self-contained'. This played on the skilled worker's desire for his own entry door, and thus, for maintaining a distinction from the unskilled worker who generally lived in a tenement with a common close. Furthermore, the use of the adjective "cheap" would have a dual purpose. First, it indicates to the skilled worker that the property is affordable. Secondly, it would be a useful sign to the lower non-manual classes not to make enquiries. This group would not wish to live in "cheap" accommodation, even if they were only prepared to pay rent of £35 a year. Advertisements were reworded for this lower middle class group. On 15 March 1880 in the same newspaper, the use of the terms 'superior tenement flat' and 'high class tenement accommodation' were adopted. In both instances rents were £35 a year. A highly skilled worker could earn as much as, if not more than, a routine non-manual employer. The difference between the two was not how much rent each paid a year (although the latter did have a higher propensity to spend on housing than the former) but where they chose to live. 'Cheap self-contained' houses were found in Newington, Dalry, and Gorgie in Edinburgh, and at St Leonard's Bank in Perth, but 'superior' tenements were built in the Meadows, Dean, and Marchmont in the larger city, as well as Craigie in Perth, although architecturally the differences and sizes of the tenements were minimal. Advertising tactics worked as, throughout the period, these subtle devices were continuously used. This demonstrates the differences within the housing market that suggests the emergence of sub-markets as well as highlighting the degree of stratification that existed in society as a result of growing class consciousness.

At the higher end of the market the advertisements for the large villas and detached properties of Edinburgh's southern suburbs did not mention the price. To talk of

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144 From an advertisement in the Edinburgh Courant, 15, March, 1864.

money was considered rather vulgar by the people who would be interested in buying or renting this accommodation (Phillips, 1984). The houses were described enthusiastically, however. Villas were "extensive and beautifully situated" or "very handsome", and "grand" was a word used to the point of cliché. Much more attention was paid to the detail of what the buyer or renter could expect. Thus, advertisements described at length the number and dimensions of rooms, the views, carriage space, servants quarters, gardens and the general salubrity of the area.[145] These differences in advertisements demonstrate the way agents used class to 'place' themselves and each other in different spaces around the city. It was effective.

Although newspapers were useful for advertising properties to let or sell, not everybody had access to them. Advertisement in the press favoured the higher end of the housing market and this explains why the majority of advertised properties were aimed at the middle classes and skilled workers. There is an almost complete absence of notices regarding houses to let for the very poor. This means any discussion of the housing market based on advertisements in newspapers and journals is biased towards the upper end of the market. Cheaper accommodation was advertised by word of mouth or through factors (Rodger, 1979).

Newspapers, although somewhat selective, do provide an insight into the class situation within Edinburgh and Perth and the way class sensitivities were used by agents in the creation of socially specific areas. The examples provided in this short section highlight the importance of perceptions of class or social status in the nineteenth century and the differences that clearly existed between classes - differences that were ultimately to become spatial as well as social.

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[145] Examples of advertisements appear in editions of the Edinburgh Courant, 1, Jan., 1864; 17 March, 1864; 19, March, 1865; Evening Express 15 and 16 March, 1880; 14 May 1880: also advertisements for land to feu and larger properties in the Edinburgh Property Review: 22, March, 1879: Apr. 12 1879; Apr. 26 1879.

The extent to which societal divisions existed can also be examined by considering the other ways in which agents became differentiated, whether voluntarily by the action of others. This prompts the question of whether urban gatekeepers engineered class consciousness or whether they simply took advantage of its growth within society, notwithstanding, of course, that urban gatekeepers were not immune from class consciousness themselves. In truth, it is a combination of both. Gatekeepers both used the class structure, yet through feuing conditions and advertisements helped to advance the growth in class consciousness because of the socially specific housing areas they created, although it is easy to argue from their actions that the activities of urban gatekeepers created the socio-spatial mosaic which then led to the heightened class consciousness. However, there is also evidence in the Report of the Royal Commission to suggest that the status groups no longer wanted to live in socially mixed areas (RRC 1885: 19,545). The middle classes were demanding a specific type of property based upon their growing social pretensions and ideals; it is a similar case with the skilled labourers (Gray, 1976). Both demand and supply of housing were taking on a more class centred orientation. It was as important to be seen to be living in the right area with the right amenities as it was to be seen wearing the latest fashions or having the latest innovations in one's house.

There is further evidence to suggest that class consciousness was a significant factor advancing social and social spatial change. A useful way of identifying this evidence is to consider contemporary sources which point to the styles of life, recreations, entertainment, and consumption habits of individuals as it was through such activities that social groups enhanced their differences. For instance, the higher echelons in society would not join a cricket club in which artisans were involved, but chose to establish their own.[146] This indicates that social difference was expressed in more than spatial terms.

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[146] This assumption comes from Gray's (1976) analysis of the occupations of members of two cricket clubs in Edinburgh, the Bruntsfield and the Grange. The former was based at the Meadows and attracted

Contemporary information in newspapers provides an insight into the rise of consumerism. Consumer durables and especially new electric devices were seen as positional markers of respectability among the middle class (Crang, 1998). Many advertisements appealed to middle class aspirations for the 'modern' 'scientific' or 'hygienic'. New technology was advancing the gadgetry and domestic appliances for the household, but more important than this, the unabashed desire for luxury items marked out the difference between manual and non-manual social groups. The latter were keen as part of their perceived status to buy non-essential items for the household, whilst the former, even the highly skilled groups, rarely strayed beyond the utilitarian and functional (Newsome, 1997). Wage differences could partly explain this, but as routine clerks often earned less than skilled masons, the former, by what they bought and how they behaved, could still distinguish themselves as 'superior' through consumption habits (Gray, 1973).

There were shops both in Edinburgh and Perth which appealed to this 'superior' nature of many inhabitants. The best examples are Jenners in Edinburgh and McEwans in Perth (Grierson, 1938).[147] A glance through the press identifies ways in which the consumer age had begun. The Edinburgh Evening Express was full of advertisements which caught the prospective customer's eye. Items advertised included Grecian bed quilts, solid mahogany dining chairs, sheepskin mats and sovereign bedspreads, all adding a touch of luxury to the market. These provide good evidence of a growing consumerism and a growing middle class market.[148]

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a wide variety of men from the highly skilled artisan classes to the lower middle classes. However, there were few professionals in this club. The Grange club on the other hand, with its university connections, was an exclusive middle class and professional outfit. Although membership fees were not mentioned by Gray, it is likely that social exclusion along these lines would have been one way to ensure separation.

147 Jenners, until the large fire in the 1890s, housed many of its workforce on the upper floors of its extensive shop in Princes Street. Soon after it was established it became a highly fashionable shop and appealed through its superior quality goods, excellent service, and advertisements to the middle class increased sense of consumerism (Grierson, 1938). McEwans of Perth was a smaller shop but maintained an exclusive clientele (Findlay, 1984).

148 Other items that suggest an age of consumerism were durables such as fire ranges, pressure boilers, presentation clocks, dining tables as well as consumables such as 'a new patent shampoo', hair restorer, spectacles, thermometers and various foodstuffs. It seems from these advertisements and many others that gadgetry and luxury items were advertised frequently (Edinburgh Courant, 14 April, 1882)

The other trend that emerged in the Edinburgh press can be seen in the items that were advertised appealing to the increased leisure time that was available. This, of course, was more for the middle classes. Lawnmowers were a common item publicised, but others included garden furniture (items only useful to those with a garden, meaning an almost exclusively middle class market), photographic equipment, conservatories and billiard tables. But the crowning item which almost single-handedly differentiated the upper-middle classes from those considered inferior was the pianoforte (Dennis, 1978). No other item so quintessentially reinforced social barriers. House drawing rooms were almost designed for them, and even those with smaller drawing rooms could enjoy the introduction of the upright piano. This fits with Gray's (1976) observation that the middle classes became increasingly associated with the arts, literature and music, a point highlighted by advertisements of pianofortes for sale in the Edinburgh Property Review. This journal was specifically for builders, landowners and property developers. To find advertisements for pianos is therefore rather curious unless one considers that the sellers of such instruments were being highly selective in where they placed their advertisement in order to reach the maximum extent of the middle class market.[149]

The Perthshire Courier advertisements were similar to those found in the Edinburgh press. The piano once again is a dominant feature. However there is one subtle distinction. Nowhere in the Edinburgh press is there found advertisements that read 'pianos for sale *or hire*'. This indicates that Perth lacks the ostentatious prosperity of Edinburgh. Nevertheless Perth certainly had its share of gadgets. The Perthshire Courier of 6 January, 1864, advertises many items in January sales ranging from the universal clothes washer at twenty-one shillings, to the portable clothes wringer at a pound.[150] There seems, however, a marked lack of luxury items, the closest examples

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[149] The Edinburgh Property Review March 22 and 29, 1879; April 5 and 12, 1879. This was the journal which advertised feus to be sold, houses and tenement blocks for sale, and villas to be let. It also listed all the bankrupts in Edinburgh declared each week - the connection remains to be researched.

[150] Other items include, the economical cinder sifter, rotary boot cleaning apparatus, rotary knife and fork cleaner, domestic butter churns, economising gas caps, rat traps and sewing machines.

are coffee filter machines, although 'hair jewellery', and a 'rich foreign dresser' appear in the following edition.[151]

Newspapers by their nature were aimed at a middle class readership, so it is not surprising that advertisements were geared to this group. The sheer growth in articles and advertisements extolling the virtues of consumerism, leisure, and sport indicate a middle class lifestyle removed from the drudgery of manual labour. Nevertheless, the skilled workers had social aspirations and tried as best they could to emulate the lifestyle of the middle class, who were viewed by the labour aristocrat as nearer socially than the unskilled labourers (Gray, 1976). Evidence given to the Royal Commission of 1885 by Mr Telfer, President of the Trades Council, colourfully illustrates this. The Trades Council was a skilled working class organisation but Mr Telfer confesses, when asked about labourers and the Irish that he 'does not come into very close communion with them as a rule so as to touch their inner feelings'.[152]

This evidence, and much more found in the Report, highlights the way individuals were placing themselves and each other within the capitalist, class based, society. Stratification was pronounced, even within the working class. Gray (1976 p.92) sees the growth in the stratification of the working class as a direct result of the increase in the division of labour, but this was not the defining feature. Again, it was the lifestyle of the respectable artisan which 'tended to project a sense of social superiority, a self-conscious cultural exclusion from less favoured working class groups' (Gray, 1976 p.97).[153] Yet there must have existed, if Heiton (1860) is right, certain attitudes before any great sense of occupational stratification. Craft guilds were known in Perth (Stavert, 1985) as well as Edinburgh, and these engendered considerable status (see Heiton 1860): but the guilds did not acted in a socio-spatially divisive manner up to 1851, even if social hierarchies did exist. Spatial polarity came with the growth in class

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151 Perthshire Courier, January 15, 1877.

152 RRC, 1885: 19,273

153 The Edinburgh Press regularly advertised trades meetings, soirees and educational lectures aimed at the skilled manual class. This both distinguished them from the unskilled, and gave them aspirations similar to routine white collar workers.

consciousness, and in particularly, the prominence of the middle class and their values (see Cannadine, 1998).

A common theme among the skilled workers was a desire to escape the stigma of living in central areas of Edinburgh alongside the unskilled group. This is reflected in the high demand for model dwellings and the pre-existing demand for better housing before slum clearances took place: a demand that Gray (1976) maintains was not simply a growth in propensity to consume a higher proportion of incomes on housing, but was associated with particular values and perceptions - perceptions perhaps which the model dwellings augured. This is a way in which the neighbourhood can relate to and shape particular social attitudes and sense of place. The aspirations for better housing are a useful way of discerning the different strata within the working class. Dr Begg (1866 p.4) sums it up in his moralising book, 'Happy Homes for Working Men,' when he states that a 'man must not only have a covering, but a home'. Clearly the value of family and home life was important among the respectable working class as it was seen as espousing the ideals of the middle class. Gray (1979) is convinced that the behaviour of the middle classes greatly influenced the artisans. Begg (1866) provides an insight into this when discussing his model home scheme at the Colonies, although it is not known how dominant or influential his views were:

> 'When he enters - which, of course, he will do very respectfully - he will be greatly pleased with the clean and tidy interior of the dwellings, the carpets, armchairs, libraries, family Bibles, and, in a word, every appliance by which a man can make his home comfortable and happy...here is the true antidote to the public house'. [154]

Here Begg not only appeals to middle class ideals but purposefully maintains that the 'respectable' working man should not engage in the pursuits that the unskilled labourer partakes in - drinking in the public house. Begg identifies the labour aristocracy as a

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154 Begg (1866 p.46-7).

distinct group above and below two clearly defined categories. This was very common among commentators on Edinburgh society (see Heiton, 1860) in what became one of the most polarised cities in Europe (Elliott and McCrone, 1980).

Newspapers and housing advertisements have already shown how agents responded to and used class with profound spatial consequences. The rise of consumerism and the differentiation of styles of life provide further evidence that classes wanted to be socially separate. Socially separate also meant spatially separate as one's choice of residence and of one's neighbours clearly had an impact on an agent's aspirations and life-style. The growth of consumerism was a means whereby the middle classes could reinforce social differences; housing suppliers responded to these differences and continued to do so. Class consciousness was both used and was heightened by the operations of the housing market which catered for an increasingly differentiated society. One result of this was that spatial as well as social differentiation emerged.

- POLITICAL AND OTHER FACTORS OF CHANGE

The housing market mechanism and the rise in both class consciousness and consumerism have been shown to be influential in the creation of socio-spatial polarisation. There were, however, other factors which may not have had such a significant impact on polarisation, but which did play a role in the changing socio-space of the burghs.

Most of these other factors can be considered political. Littlejohn's Report of 1866 is a useful source to considered the political influences on socio-spatial change. Littlejohn was required to produce a sanitary report and comment on the state of Edinburgh. His recommendations led to the Corporation of the City of Edinburgh pulling down many of the slums and implementing sanitation legislation. The socio-spatial effects of this is still debatable. Slum clearance may have reduced the number of dwellings available for the poorest, and so exacerbated over-crowding. Alternatively, new housing could

have been provided for the slum dwellers elsewhere. Some examples of paternalist enterprise do exist for the poorest (Chalmers Buildings is an example Littlejohn cites), but there is little other evidence to suggest that this group was well provided for.

The growth of planning legislation, the increasing strictness of the Dean of Guild Court, as well as municipal legislation on working class housing, and the Artisans' Dwelling Act (Scotland) all contributed in some way to the changing socio-space of Edinburgh and Perth, although in a period of *laissez-faire*, political and institutional involvement was fairly limited. But, some changes to building regulations, and the lowering of house densities were required and these did affect urban space and, perhaps, an agent's perception of his or her place.

The discussion of this chapter, thus far, has focused at the meso-scale in order to outline the structural changes within the city to which agents acted within and were constrained by. However, the role of individual decision makers has been less prominent mainly because their action is generally more micro-scale in scope. Now that the meso-scale factors driving change have been outlined in some detail, the ways in which micro-areas were affected by these factors can be examined to help shed light on the processes and influences of socio-spatial change.

5.3 MICRO-AREA CHANGE: INTRODUCTION

In turning to the micro-scale analysis, an immediate problem surfaces - what comprises a 'micro-area'. At the macro-scale, Scotland could be examined; at the meso-scale Edinburgh and Perth as burghs can be analysed, but there is a difficulty in selecting, defining and identifying micro-areas. Conveniently, Edinburgh and Perth are divided into small areas for census enumeration. These enumeration districts, although arbitrarily drawn, do provide an opportunity for detailed analysis because of the considerable data available for them. Yes, it is likely that some EDs will traverse divergent areas, and that they will vary in size and population. But if these limitations

are accounted for during analysis, then EDs can provide a useful way of assessing the effects of structure and agency interaction. Other areas which might have been chosen, such as parishes or wards, can be simply too big and diverse, or have little data recorded specifically for them.

The selection of which EDs to use in the micro-study must be made with care. It is important that those chosen must be typical of the city they purport to represent. This is difficult to achieve. However, with the use of sources from late nineteenth century Edinburgh and Perth, some idea was had of the perceived areas within the two burghs from which an ED could be selected. Whereas this is not ideal it is the best way available given the limitations any selection process has.

Seven micro-areas within Edinburgh are chosen as case studies. They have been selected based upon the contemporary perceptions of the areas of Edinburgh in the later nineteenth century. Two sources are available to identify these areas. The first is Littlejohn, who identified eight distinct areas in Edinburgh. His idea was to compare sanitary conditions and mortality rates from the various parts of the burgh. Additionally, Oliver and Boyd's guide book also mentions up to seven distinct localities within the capital. Despite the obvious limitation that both of these sources are official (and so present an element that these areas are somewhat contrived), they do nevertheless provide a reliable indication of how Edinburgh was perceived by contemporaries. As such, seven EDs have been selected from each of the perceived areas. A similar scheme is adopted for Perth.[155]

5.4 REPRESENTATIVENESS IN EDINBURGH

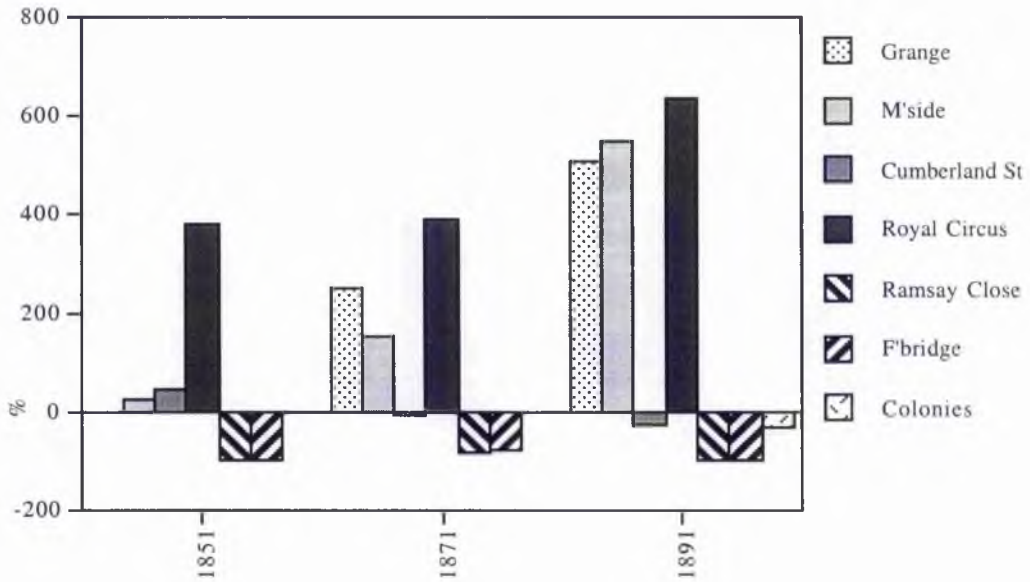
The analysis which follows first identifies, using the chi-square statistic, the levels of over- and under-representativeness of social groups within EDs with respect to the

[155]The EDs in Edinburgh are taken from the Old Town, the New Town, inner and outer suburbs, a newly developed area and an industrial area. The specific EDs chosen were done so from the population density data maps which suggested where spatial change was high. This increases the chances of advancing the understanding of socio-spatial change.

whole city. From this the nature of change within each ED is analysed in terms of the meso-scale factors and structure / agency interaction. Finally, the nuances of change of this interaction within the EDs is further assessed by introducing the concept of a contributor (see below).

The graphs and maps below (figures 5.1 to 5.8) illustrate the deviance between the observed and expected number of households of a particular social status within each selected ED in Edinburgh and Perth. Over time, changes to this deviance can be noted.[156] A negative reading in the graphs means that a social group is under-represented with respect to the city as a whole.

Figure 5.1: Over- or under-representativeness of the upper non-manual group in seven EDs in Edinburgh 1851, 1871 and 1891:[157]



Source: Census enumerators' reports 1851, 1871 and 1891.

156 The chi-square calculations can be found in appendix E.

157 The scale on this graph is rather misleading. It shows huge over-representation of upper non-manual households in the Grange, Morningside and Royal Circus, but seemingly modest under-representation in Fountainbridge and Ramsay Close. This is not the case. The maximum under-representation is 100%. This was the case in 1891 in both Ramsay Close and Fountainbridge. It means, of course, no representation at all of the upper non-manual group in these EDs.

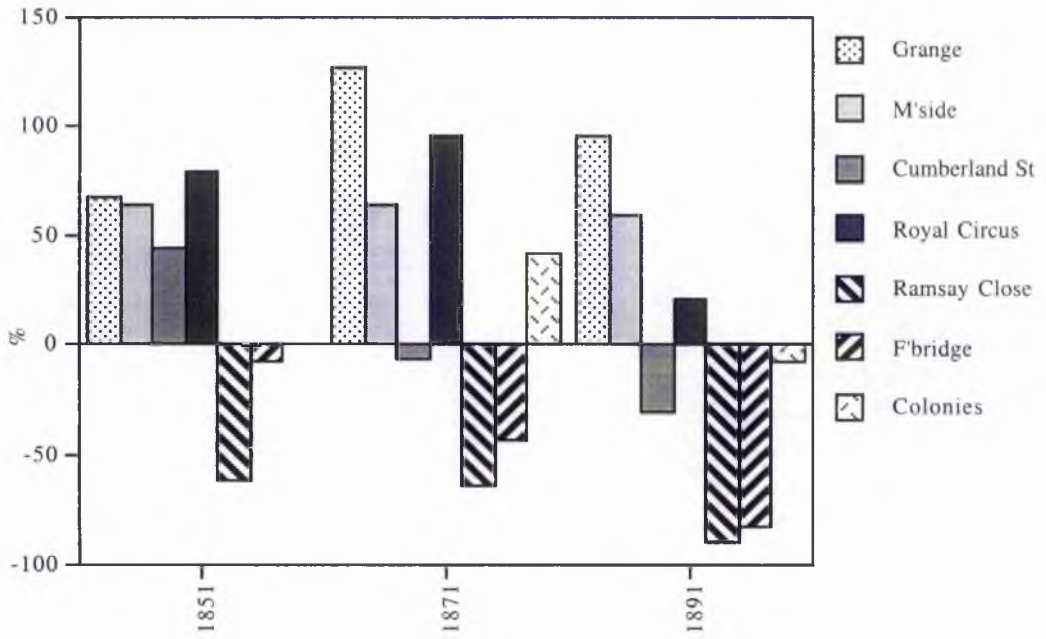
This graph (figure 5.1) above shows some interesting changes and highlights very high over-representation of the highest social group in Morningside, Grange and Royal Circus by 1891. In these areas the manual status groups became under-represented with respect to the whole city. Figure 5.1 also suggests that the upper non-manual social status group were increasingly choosing Royal Circus, and the suburban Enumeration Districts of the Grange and Morningside in which to live. This had the effect of increasing socio-spatial polarisation, as these areas were increasingly less likely over time to contain skilled manual and unskilled manual households as the subsequent graphs highlight.

The extremes of over- or under-representativeness are generally less in figure 5.2 compared with figure 5.1. Figure 5.2 below represents the levels of representativeness of the lower non-manual group in Edinburgh. As with the highest social group, the lower non-manual households were over-represented in the southern suburban EDs of the Grange and Morningside, as well as the New Town ED of Royal Circus. They were most under-represented in Ramsay Close in the Old Town and industrial Fountainbridge, where over time socio-spatial polarisation became more pronounced as the middle classes moved away, and the area became predominantly an area of skilled workers.

There are several reasons why the extremes of over-representativeness of the upper non-manual group with respect to Edinburgh as a whole, were less evident among the lower non-manual group. These are probably due to the fact that the lower non-manual group was not at the top of the social status hierarchy. As such the lower non-manual group would have had closer links with the skilled workers, than the upper non-manual group did. For instance, the lower non-manual group would have contained many routine clerical workers who had less compunction about living close to, say, labour aristocrats than advocates might. Furthermore, the lower non-manual group probably had a younger age profile than their social 'superiors'. This implies that some members

of the lower non-manual group were at an earlier stage of their career and the financial resources which make a move to the most exclusive parts of town possible had yet to be earned. Generally, however, most lower-non manual households were in lower status jobs than the professionals and so had a lower status. This fact alone may reflect the different residential patterns and representativeness trends.

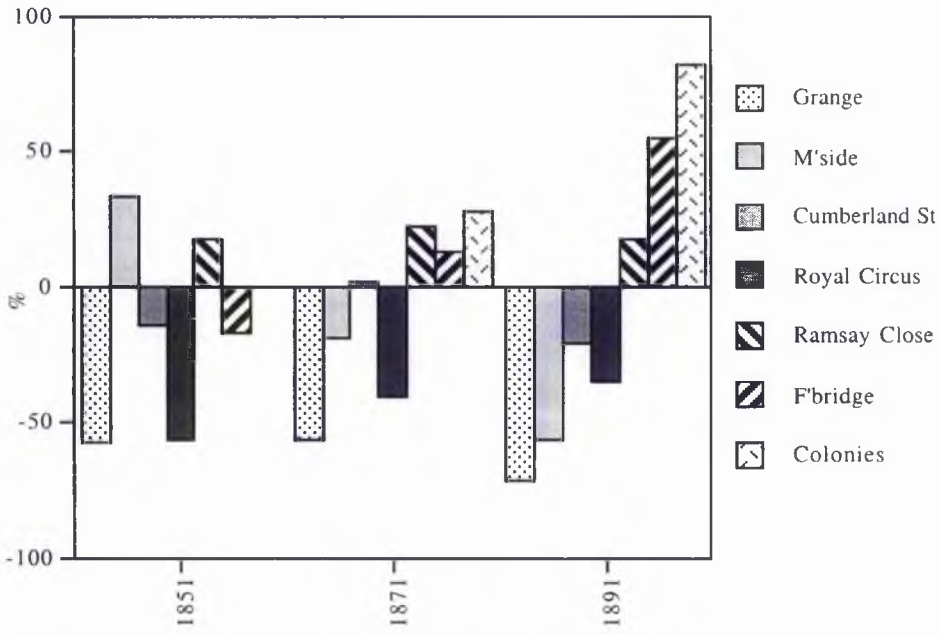
Figure 5.2: Over- or under-representativeness of the lower non-manual group in seven EDs in Edinburgh 1851, 1871 and 1891:



Source: Census enumerators' reports 1851, 1871 and 1891.

The most dramatic change in the graph above is in Cumberland Street where a considerable over-representation of the lower non-manual group in 1871 became a considerable under-representation in 1891. This is likely to be attributable to the structural changes in the area which resulted in many former town houses and grand tenements being converted to multiple dwelling units and, thus, there was a consequent influx of manual workers.

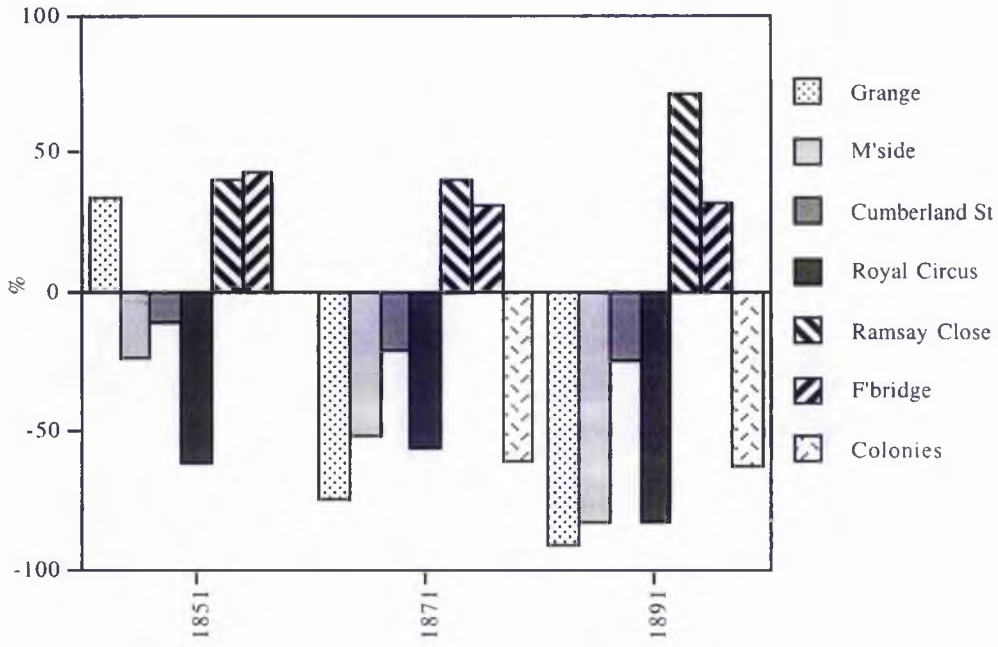
Figure 5.3: Over- or under-representativeness of the skilled manual social group in seven EDs in Edinburgh 1851, 1871 and 1891:



Source: Census enumerators' reports 1851, 1871 and 1891.

Figures 5.3 and 5.4 show the opposite trend to those shown in figures 5.1 and 5.2, namely that in the inner-city and working class areas of Edinburgh it is the manual workers who are over-represented with respect to the city as a whole, while in the New Town and suburban EDs the manual status groups are under-represented at least by 1891. In the Grange, for example, the unskilled group was over-represented in 1851 when the ED was still largely agricultural, by 1891, the Grange was entirely suburban in character and this was reflected not only in its social composition but in the under-representation of the skilled and unskilled social groups and the over-representation of the non-manual groups. This fact alone suggests Edinburgh was a city where, over the period 1851 to 1891, significant socio-spatial change was experienced.

Figure 5.4: Over- or under-representativeness of the semi- and unskilled manual social group in seven EDs in Edinburgh 1851, 1871 and 1891:



Source: Census enumerators' reports 1851, 1871 and 1891.

Figures 5.1 to 5.4 illustrate two important phenomena. The first is structure / agency interaction. The fact that representation of social groups in Edinburgh was changing points to a mobile population, and the growth in polarisation to the increasing class consciousness in society. The second phenomenon evident from the graphs is the micro-area socio-spatial change. The extreme under- and over-representation of certain social groups in 1891 lead to a conclusion that socio-spatial polarisation increased in Edinburgh between 1851 and 1891. Increasingly, areas became associated with a particular social group. By 1891 there is less evidence to suggest a city with socio-spatial mixing. In fact, the postulation by Elliott and McCrone (1980) that Edinburgh was one of Europe's most socially polarised cities fits well with the evidence presented above.

5.5 REPRESENTATIVENESS IN PERTH

Maps rather than graphs can be used for Perth, as there were fewer EDs and so a less complex picture emerges than would for Edinburgh. The maps below (figures 5.5 to 5.8) indicate the levels and nature of change in representativeness. What is most striking is the large under-representation of the upper non-manual group in the central EDs by 1891. In 1851 there was little under- or over representation. At the meso-level the map suggests suburbanisation, as the peri-urban EDs becoming increasingly over-represented in terms of the upper-non manual group. This is given greater validity in figure 5.6 where the lower non-manual group is, if anything, even more over-represented in the outer EDs with respect to the city as a whole. At the micro-area, change is either startling or very small. There is little intermediate change with the upper non-manual group. This may suggest widespread moves over a short period. To illustrate this, consider how the upper non-manual group in Dovecot (F) moves from an under-representation of over 60% in 1851 to an over representation of over 60% by 1891. The converse of this happened in St Leonards Bank (K) and George Street (X).

There are three broad trends noticeable from the Perth maps (figures 5.5 to 5.8), first the movement by 1891 of both non-manual groups to the peripheral districts.[158] The darker shaded central EDs become lighter by 1891, while those EDs on Perth's edge became much darker. This adequately suggests both population mobility and suburbanisation. Second, the skilled manual group loses areas of high over-representation by 1891. Of all the groups, they had the most even spread across Perth, although they are clearly under-represented in some of the peripheral EDs. Thirdly, the unskilled manual group displays the opposite process to the non-manual groups. The unskilled households were increasingly dominant in central EDs by 1891 and under-represented in peripheral EDs.

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158 Perhaps this is another instance when micro-scale analysis is important, as the small number of movements by the highest groups could get overlooked at a higher level, yet at the micro-level they played an important part in changing the socio-space of areas.

Figure 5.5 Perth, 1851 - 1891:
Representativeness of the upper non-manual social group.

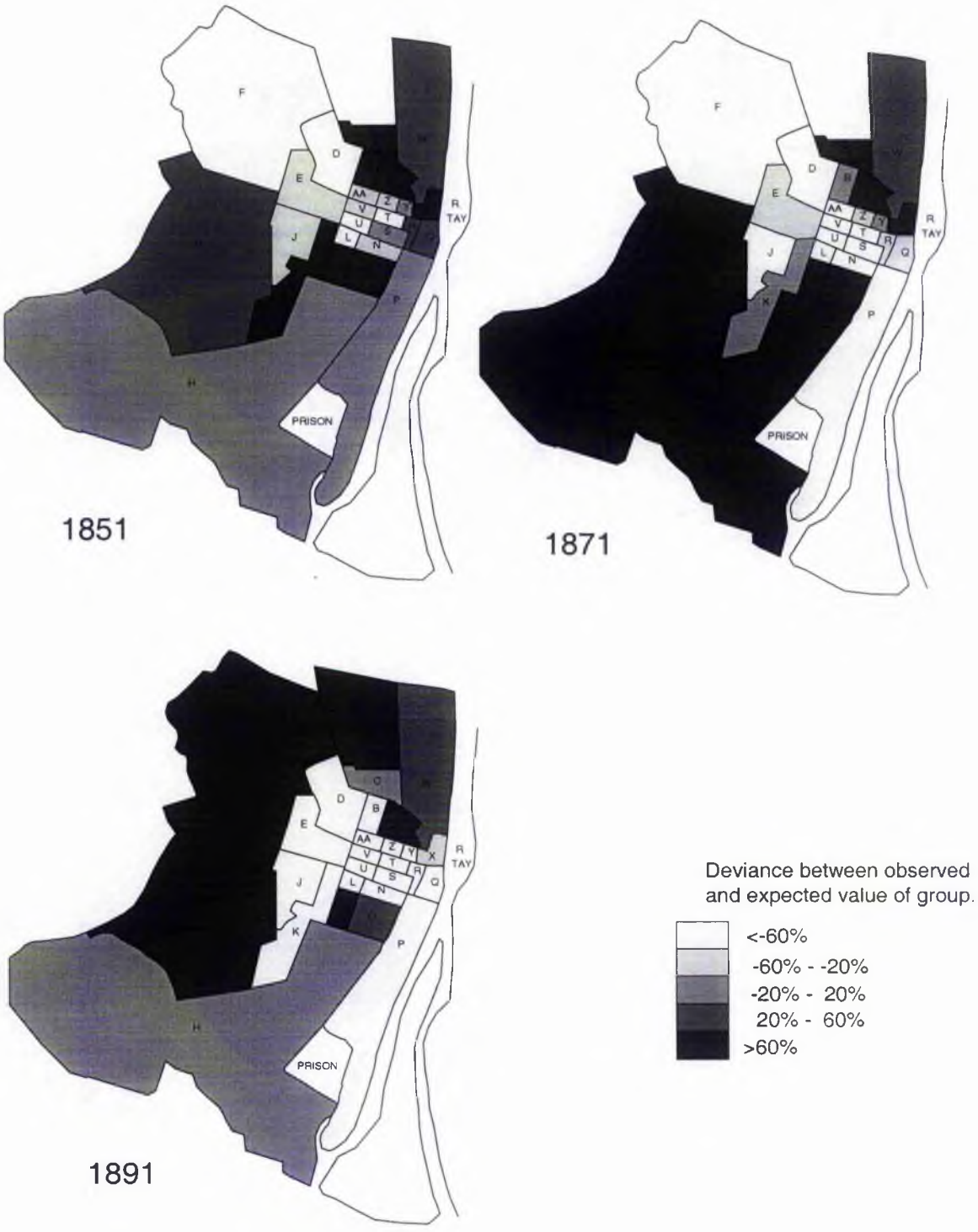


Figure 5.6 Perth, 1851 - 1891:
Representativeness of the lower non-manual social group.

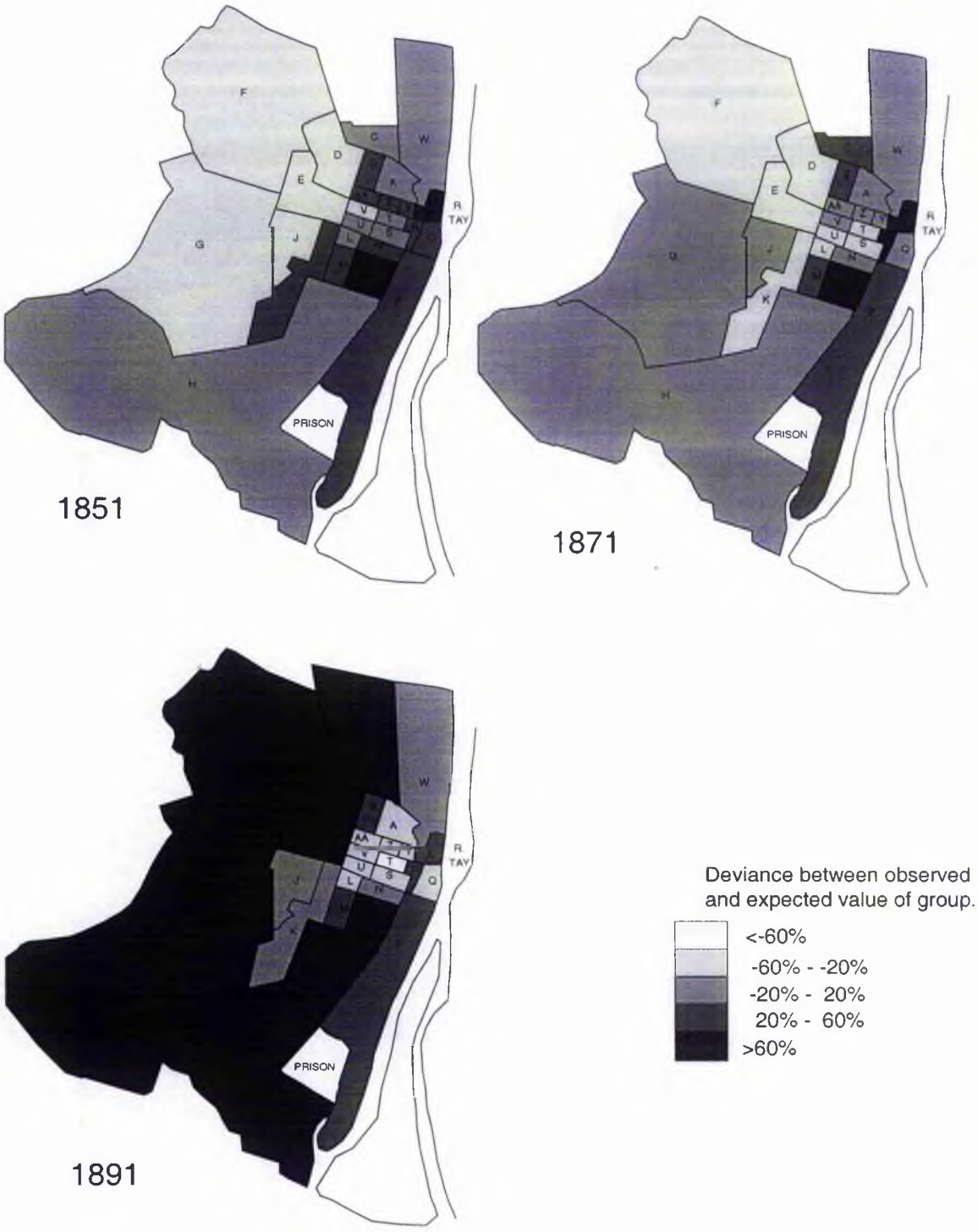


Figure 5.7 Perth, 1851 - 1891:
Representativeness of the skilled manual social group.

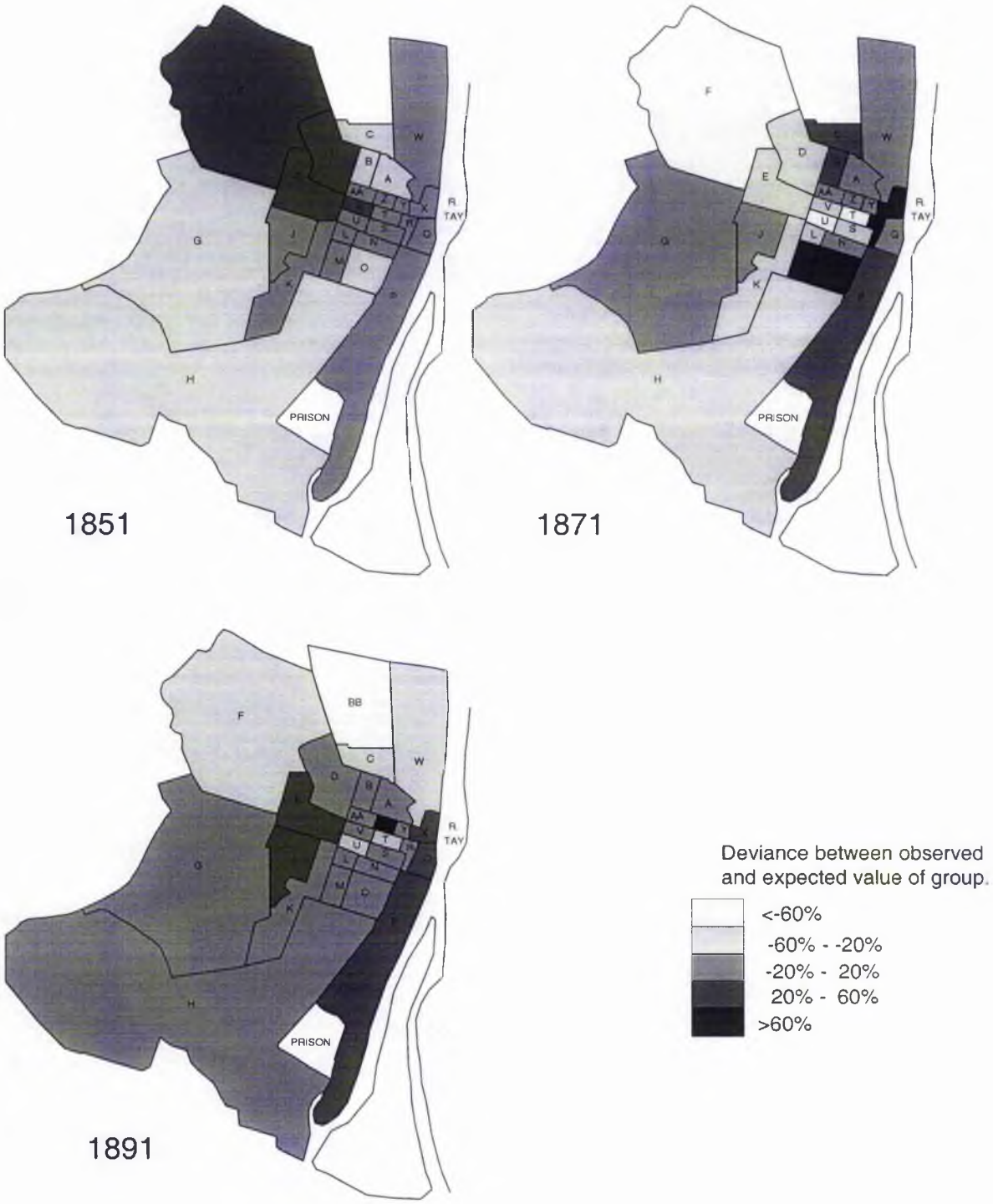
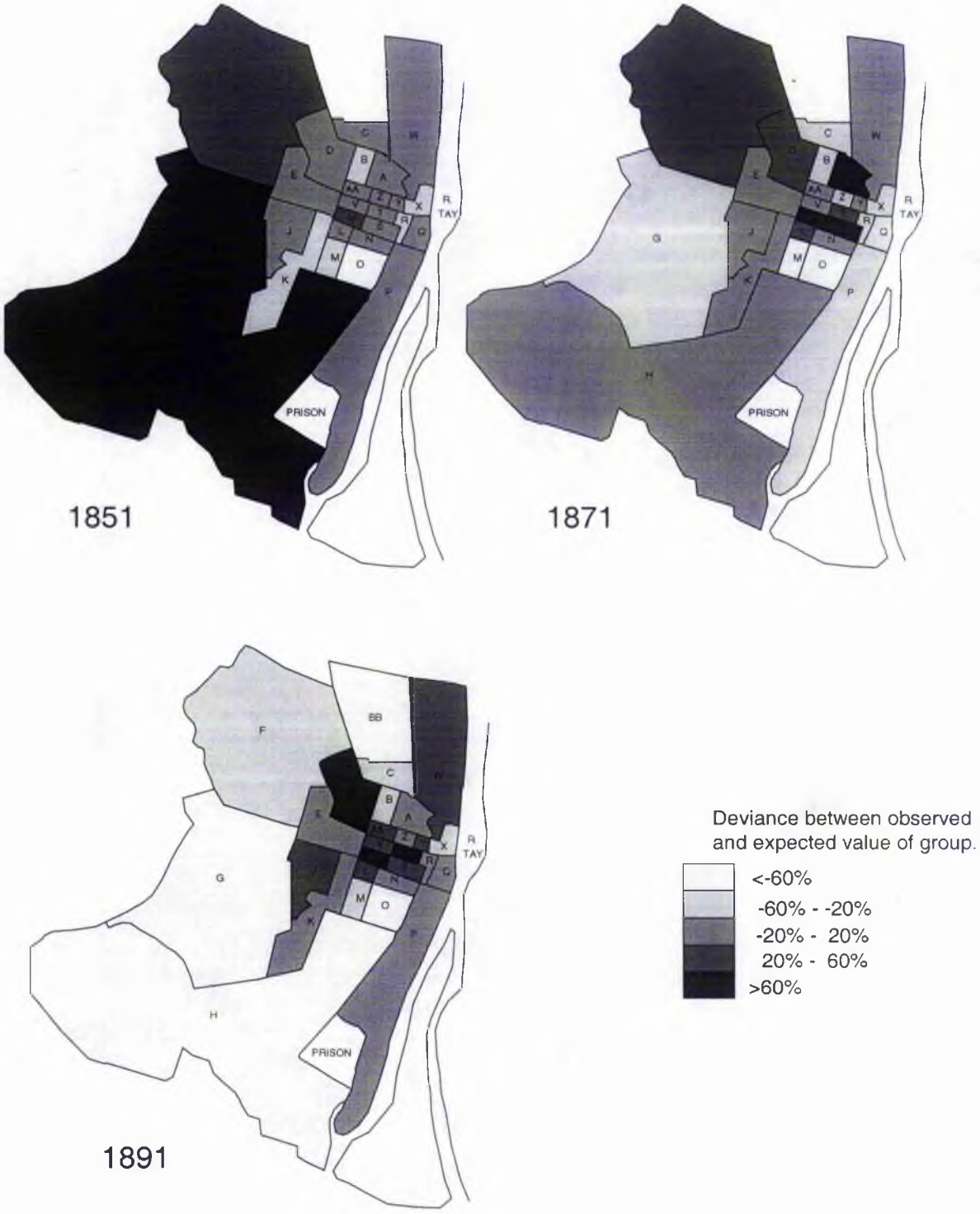


Figure 5.8 Perth, 1851 - 1891:
Representativeness of the semi- and unskilled manual social group.



Thus, the most cursory glance at the representation maps shows a dramatic change at the meso- and micro-scales. The light shading of the early maps belies the fact there was considerable lower non-manual over-representation in some of the central EDs. But by 1891, a negative image is produced, as the once dark shaded EDs in the centre are now light, while the outer EDs are dark. Middle class suburbanisation was no doubt occurring, but significant micro-level change must not be overlooked. Did the industrialisation of St Leonard's Bank (K), or the increasing dominance of unskilled workers in Canal Street (N), cause a retreat of lower non-manual households to the suburbs? The answer to this can be no more than postulated, but the growing sense of class awareness among agents may explain the exodus of lower non-manual households to the suburbs (see chapter six). Third, the peripheries of Perth moved from a position of over-representation of the unskilled group in 1851 to highly under-represented by 1891. The reverse is true for the central areas. The maps, however, should be read with some care. The EDs were arbitrarily drawn and no account is made for the way the ED boundaries could cut across 'natural' social areas. Indeed this reveals one of the limitations of using the chi-square statistic.

There are other limitations with the use of chi-square in this thesis. The fact it is applied to given EDs means that population and status group distribution within the burghs might be over- or understated. Second and more generally, the selection of different EDs for Edinburgh might have revealed different representativeness levels. However, those EDs chosen must be regarded as typical for the city and used to represent the burgh. Finally, the use of very small numbers in chi-square calculation, such as, for instance, the upper non-manual group in Fountainbridge can make the chi-square statistics unreliable. This is difficult to overcome but generally only affects the upper non-manual groups.

The graphs and maps indicate growth in socio-spatial polarisation over the period 1851 to 1891. In order to understand this fully, however, individual areas must now be examined in more detail. This allows an assessment of how the structural factors

driving socio-spatial change at the meso-level, for example the housing market, class consciousness, and to a lesser extent capital flows, affected micro-areas. This also provides a spatial context for the agency factors of change, such as decision making and migration which operated within micro-areas and which are considered in chapter six.

5.6 MICRO-AREA CHANGE IN EDINBURGH

The chi-square statistic enabled a clarification of socio-spatial polarisation: social groups were becoming more polarised from each other and this is concluded by the fact that social groups were increasingly over- or under-represented in particular EDs with respect to the whole burgh. The micro-areas can now be assessed in more detail by examining the changes that were occurring within them.

The first area of Edinburgh to be considered is Fountainbridge. It was an industrial part of the capital. During the period 1851 to 1891, the census and Post Office directories reveal a growth in industrial and skilled trades within the area. In particular, Fountainbridge grew to specialise in watch making, precision instrument making, lapidary and jewellery.[159] New breweries with their auxiliary trades, such as coopering, were also established in this area as well as an expansion of heavy industry. This part of Edinburgh was suited to industrial growth as it had good road and rail communications with Glasgow (Haymarket station and goods depot is located here) as well as the proximity to the canals which meant a very good freight link to the Port of Leith and the River Forth. The breweries made especially good use of the canal. The area was well placed to be part of the national space economy, through these transport links.

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159 Eleven such tradesmen are listed in the census 1851 for this ED: this increased to over thirty by 1891. Care is needed when using Post Office directories as they are very selective. Nevertheless, in this case, the fact they show a substantial increase in certain trades points to a specialisation following the rules of game theory.

Urban gatekeepers responded to the industrialisation and structural changes in the Fountainbridge area. Caledonian Crescent is a good example to highlight this. All the houses in this road were built on a speculative basis during the insurgent years of Fountainbridge / Dalry. One such speculator, James Steel, feud his land from the Walkers of Dalry. The houses he built in Caledonian Crescent appealed to the 'better working classes' (RRC 19140-19151). The valuation rolls show that the average rateable value for these properties was £11 per year in 1880 about two pounds above the average for the working classes throughout the city (RRC 18,858). This is comparable to the rateable value of much of the co-operative housing that was built specifically for skilled workers (RRC 19,069). This example highlights the way an urban gatekeeper used class to alter the socio-space of the micro-area through his control of the housing market.

Schemes such as Steel's meant that Fountainbridge became increasingly associated with the skilled worker. The dominance maps in the previous chapter show this (see figures 4.13 - 4.16). The increasing dominance was a response by agents to the new industries locating in this area, the ready availability of housing, provided by the likes of Steel, that suited the growing needs and aspirations of skilled workers as well as the increasingly working class character of the area. The coming of industrial capitalism and large scale production did maintain an unskilled population in the area, but usually in the older, run-down properties closer to the city centre. The growing working class identity in Fountainbridge also meant it was an area that no-longer appealed to the middle class. By 1891 they made up less than 5% of the area's population. Fountainbridge at this time was a highly industrialised area that had seen extensive house building including some model dwellings for 'respectable workers (Littlejohn, 1866). It was an area that seemingly prospered.

The main structural change experienced in Grange and Morningside (EDs from the outer and inner suburbs of Edinburgh respectively) was the transition from rural and

agricultural to suburban and white-collar.[160] In the previous section it was illustrated how the landowners and feudal superiors in southern Edinburgh laid down specific conditions which discriminated against the working class to appeal to the growing middle classes who wanted to be distinct from those they perceived to be inferior, as well as simply wanting to escape from the pollution or disease in the older parts of the city. The suburbs were thus designed to be spacious, green and healthy. Large villas and extensive gardens were built, with grand tenement apartments nearer the city centre. Road layouts were designed for carriages and drainage was advanced for its time (Gilbert, 1901). Some of the earliest electricity in Scotland was installed in this area appealing to consumer fashion (see Elliot and McCrone, 1980).

Middle class agents had the means, and it seems the motivation, to move away from the inner-city squalor and industrial developments. Their regular incomes meant they had an effective housing demand to which house-builders responded (Rodger, 1983). Many middle class householders had houses built to specification.[161] This contrast to working class parts of the city where house-builders were not prepared to risk investing money building for the poor, unskilled social group as profits could not be guaranteed (Rodger, 1983). This identifies another aspect of agency action based on levels of power and influence within the capitalist structure. The effective use of power by agents meant a growth in differentiation with those most well off having the pick of the best areas. This links to Hoyt's notion of the wealthiest within the city choosing the most desirable sector within which to live - this was usually the one furthest from industry and the lower status groups. Thus, the suburbs became highly polarised as the maps in chapter four suggest. But this polarisation was made more prominent by the

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160 The Post Office directory maps covering the period 1855-1891 illustrate this transition.

161 The valuation rolls and the details from the Sasines prove this to be the case. Many of the feuing contracts for new houses (usually villa type property) in the Grange were made by the feudal superior to an individual builder. This was not the case in Fountainbridge where often a speculative builder was commissioned to build a whole row of tenements (See the Register of Sasines 12 May 1884 section 1611.155). Sir George Warrender had a feu charter drawn to a William Grey for a 'dwelling house' in Polwarth Gardens, while on April 19 1876 section 631.146, the feudal superior James Steel, himself a prominent builder, had a charter issued to builders Craig and McLeod of Edinburgh to build a tenement block in Caledonian Crescent in Dalry. In both examples strict conditions were laid down concerning the expense, annual rent, height, drainage, appearance, and by implication, the type of tenant to be housed. This way feudal superiors exercised considerable power in determining the social status of an area and thereby increasing social polarisation.

fact that the middle classes were virtually absent from the Old Town, where they once occupied a prominent position on the second floor of tenements along the Royal Mile (see Elliot and McCrone, 1980). The contrast between the southern suburbs and the Old Town could not be greater.

Gauldie (1979 p.15) insists that because land-owners and speculators found it possible to think of people being crowded into fast-growing cities as 'a separate class of individual' with less pressing needs, that they were able to condone the deterioration of inner urban areas into slums. As a result slum dwellers were categorised as a homogenous group. In Edinburgh, the Ramsay Close ED in the Old Town was dominated by unskilled labourers and this was not a unique case. Almost all EDs in the Canongate by 1891 predominantly housed the semi- and unskilled social groups.[162] The exodus of higher social groups from these areas can be explained by the growth of class awareness, and the desire to live in better quality housing and more conducive areas, away from perceived social inferiors. Furthermore, the outbreaks of epidemics, especially tuberculosis, frightened the 'better' classes away to salubrious redoubts (Malloch, 1999).

Slums persisted and worsened throughout the century in the Old Town, exacerbated ironically by the slum clearances and the new roads built which were designed to improve ventilation (Littlejohn, 1866). The result was increased homelessness and overcrowding. But why did this continue? New housing was being built throughout Edinburgh, why not here?; why did the poorest section get overlooked?

The Old Town, as Littlejohn notes (1866 pp 13-16) decayed quickly over the last quarter of the nineteenth century. Agents in this area, largely unskilled workers, were not empowered to move or do anything about their living condition. Further, it was not in the financial interests of empowered agents to help. Thus, homelessness, urban

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[162] When action was taken by local authorities in the twentieth century to deal with the mass over-crowding in totally inadequate slum housing the effect was to complete the social segregation, as large schemes were built, often on peripheral sites and 'distinguished by kind and distance from other urban dwellers' (Gauldie, 1979, p.16).

decay and downgrading resulted, and can be viewed as an aspect of structure / agency interaction highlighting the differences of influence and control of resources. The socio-spatial implication was a polarised area of unskilled workers with below standard living conditions, overcrowding and poor housing. Many tenements were condemned and stood empty. In Ramsay Close over a third of the dwelling unit were empty in 1880.[163] The drainage here was also a chronic problem (Littlejohn 1866). There are some instances chronicled of structures collapsing, in some cases with fatalities (Best, 1968),[164] and when tenements were not collapsing, many others were being replaced or in-filled so that the built form of the area was in a constant state of transition. Some entrepreneurs tried to rectify matters with renovation projects.

One such project was carried out by Dr Foulis. Details of what he did were presented in a Report of the Committee of the Working Classes of Edinburgh on the Present Overcrowding and Uncomfortable State of their Dwelling Houses in 1860.[165] The report laments the dire state of housing for the poorest of Edinburgh. It confines its comments to the Old Town. Railways, factories, but also new churches, were cited as exacerbating the problem of overcrowding. It also notes that the increased demand for slum property pushed up rents, further impoverishing the population. This report was designed to highlight these grievances and rectify them. One way it did this was to cite Foulis' scheme in the expectation that others would follow suit. Although there are some recorded cases of this happening, it did not become a widespread phenomenon (see McPherson, 1860).

Foulis purchased a tenement block in a close off the Grassmarket. The frontage was rebuilt and the rest was extensively remodelled to provide better ventilation and

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163 Valuation rolls, Edinburgh 1879/80.

164 Examples of collapses of tenements that have been chronicled include, in 1857, a nine-storey tenement which collapsed on the Mound after a fire: one hundred people were rendered homeless; on 24 November 1861 a tenement between Bailie Fyfe's Close and Paisley's Close collapsed: thirty-five people were killed; in 1866 a house on Bishop's Land, 129 High Street, collapsed: sixty-six people were rendered homeless; and in 1868 a hurricane destroyed a house in Duke Street - four lives were lost (Gilbert, 1901: Edinburgh Courant 24 November 1861). These are a few examples of numerous occurrences of tenements collapsing.

165 The author of the report was Alexander McPherson.

sanitation. The result was an enviable property for the poorest in the city. The flats once renovated, though, were beyond the financial reach of some. Foulis himself made a ten percent return on his investment, which was reinvested in other projects (McPherson, 1860). Similar schemes in the Old Town were followed up by Peter Scott, and in Fountainbridge where Chalmers' Buildings were erected and later won praise from Dr Littlejohn (1866). These examples point to paternalistic action by agents but little was done by the city authorities, despite the grim warnings of Dr Littlejohn. Ramsay Close, thus deteriorated until it was eventually demolished early in the twentieth century.

Model dwellings, however, did become popular in Edinburgh largely through the efforts of co-operative housing associations. Model dwellings were generally built to appeal to the growing aspirations of the skilled working class - the 'better class of working man' (Patterson, 1862 p.8) who wanted to distinguish himself from the ranks of the unskilled. Playing on the values and aspirations of this group, entrepreneurs, speculators and new housing companies constructed several model dwelling sites across Edinburgh. Agents responded enthusiastically.

Two theories can be suggested for the popularity of model dwellings. The first is highlighted in Patterson's report of 1862.[166] Patterson was highly critical of the condition of the housing for the working classes - 'there is no city in the empire in which the house accommodation for the working classes is more inadequate, both as regards quantity and quality'.[167] Although perhaps an exaggeration, as city valuator, Patterson was expert with the regard to housing in Edinburgh - though the authority he spoke for the rest of the empire is in doubt. He cited the reasons for the inadequacy as

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166 This is the Begg Report of the Committee on the Houses for the Working Class in connexion with Social Morality to the General Assembly of the Free Church of Scotland, May 1862. Robert Patterson was the city valuator and so had day to day dealings with the housing in all parts of Edinburgh. He submitted a report to this publication.

167 From the Begg Report (1862; p. 3) The city valuator added a report in addition to reports presented on the moral condition of the residents by the reverend gentlemen of the Free Kirk. The latter had more interest in the state of the morals of the individual residents, especially children, as a consequence of living in such poor quality housing which, according to Begg, attracts all the destitute and debauched members of society.

the destruction of housing for railways, public improvements, factories and so forth whilst little housing had been replaced - 'indeed there has certainly not been one new house added for three which have been removed' (Patterson, 1862, p. 4). Thus, the capitalists were destroying housing to build monuments to enterprise with little regard to the housing of the poorest. This must also be seen in the light of the increase in population which added to the problem.

The second theory for the creation of co-operatives appeals to class consciousness. This is related to the situation described above as Patterson felt that the type of 'privation and misery' to which 'respectable families among our working population are subjected' was quite unacceptable (Patterson, 1862, p.5). Yet, it can be inferred that it was perfectly acceptable for the poorest members of society, those unskilled workers, 'the Irish, labourers and what not'.[168] The implication of this is that there was a considerable indifference on the part of the middle class to the extremely poor, and it was generally regarded at the time that the slum dwellers had themselves to blame for the situation in which they found themselves (see Begg, 1862). They were not 'deserving' of the philanthropy that Dr Begg and James Colville were prepared to exercise to the 'better class of worker'. There were paternalistic enterprises which dealt directly with the extremely poor of which more is said shortly, but the co-operative societies were affected by class and status categorisation, in that they were prepared to house only those considered suitable enough. Such discrimination added to social polarisation.

The Colonies of Stockbridge were an example of model dwellings. These were model dwellings built for the 'better' working classes. They were begun in 1861 by James Begg and James Colville. The Begg Report (1862) concluded that skilled working men desired more privacy than a tenement close could afford. This was based on Begg's extensive research in areas of the Old Town and his conversations with skilled working men. Model houses were constructed based upon the principles of privacy,

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168 This evidence is from the Begg Report (1862) and from minute 19,273 of the RRC, 1885 - evidence from A. C. Telfer.

respectability and efficiency. Moreover, the houses were of a terraced type and not tenemented.[169] These were the 'ideal' properties which the directors of the co-operative thought would appeal to the growing status consciousness of the artisans. Individual front doors and indoor water closets were the essential items for the aspiring skilled working class family (Begg, 1866).[170]

The rationale and operations behind the Colonies scheme are considered using the evidence given to the Royal Commission of 1885 by one of the co-operative's directors, James Colville, as he provides considerable insight. The co-operative was a house building and selling company which started with capital of £10,000. They rented out at between eleven and twenty-five pounds a year - a further example of urban gatekeepers discriminating against the poorest in society who, according to the Commission findings, paid, at most, £10 a year rent, with the average below six pounds (RRC, 1885: 18659-18667). Indeed, Colville, when directly asked by the Commission if he considered supplying houses to meet the needs of the very poor, replied tersely: 'No, we build none for them', despite admitting that the housing accommodation in Edinburgh was in sufficient supply for the better classes, but the poorest 'did require something' (RRC, 1885: 19,072-5). His scheme was for the 'deserving' poor: those who sought temperance, thrift and respectability. He believed the very poor neither desired nor had the ability to strive to such attributes (Begg, 1866).

Thus, the Colonies were designed for, and appealed to, skilled workers not only to live in better conditions with like minded neighbours, but to give them an opportunity to buy their own property. On the face of it this would seem rather difficult, but the idea was to purchase through weekly instalments. Instead of paying a rent, the occupant

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169 The typical design of a block was divided upper and lower houses. The upper dwelling was entered from the rear, the ground floor dwelling from the front. Each self contained unit had a parlour, a bedroom, a kitchen and a water closet. Some of the later houses had two bedrooms and a bathroom.

170 The sources for the discussion on the Colonies are the Edinburgh Co-operative Building Company minute books, company ledgers and Articles of Association: also two reports from the Edinburgh Evening Courant: Oct. 24, 1861 and November 30, 1861. Additional background material is found in Begg (1866) and Reid (1894).

made a contribution to buying his house, which had an upset value of £220 (ECC Minutes). This was a further way of status differentiation, as unskilled workers exclusively rented their accommodation.[171] The initial effect of building model dwellings whether at the Colonies or at Pilrig was the creation of a residentially segregated area of skilled workers, which naturally added to the polarised nature of Edinburgh. However, overtime the Colonies became an area more associated with the semi-skilled classes (see chapter six). The old co-operative ethos died off towards the end of the century: no longer were 'deserving types' sought (Pipes, 1998). Colonies changed little structurally over the period 1871 to 1891, but the ethos of the area changed from the days of Begg; this may have impacted upon the socio-space.

The New Town of Edinburgh was the grandest part of the burgh. It is well designed to a classical, grid-iron pattern. Palladian architecture is interspersed with other neo-classical and rococo designs. The crescents and circus have extensive gardens many of which are public places. The area was a marked contrast to the nearby Old Town. The New Town was extended in the nineteenth century northwards towards the Water of Leith. Although still well built and desirable, the extension was not on the same grandeur as the New Town proper. Two EDs from each distinct part of the New Town provides a contrasting view of socio-spatial change (or lack of it!).

Of all the areas in Edinburgh to be considered, Royal Circus ED hardly changed at all. It was in 1900, as it had been in 1800, a very grand, sweeping circle with three to four storey Georgian town houses. There was an extensive garden in the centre of the Circus. No change can be noted in terms of visible appearance, thus apart from the in-comings and out-goings of residences little else occurred (although a small finishing school was opened here and there was a growth in doctors and lawyers offices in the area replacing private residences). Despite this lack of change, polarisation seemingly increased here with respect to the city as a whole according to the chi-square statistic -

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171 Finance initially came from city investment companies before the co-operative itself made arrangements. This increased the accumulated surplus at the end of the year, and after the share-out of dividends amongst the members of the co-operative, there was a sizeable sum for investing in new houses. In fact, the Edinburgh Co-operative Company provided houses for skilled workers until the Second World War (Pipes, 1998).

although this technically may be true, it is a misleading guide to micro-area change in social terms and one the contributor will redress presently.

Cumberland Street on the other hand in the extension to the New Town underwent the sort of transition which ably demonstrates the interaction of structures and agents. The Water of Leith provided a sufficient navigable transportation route from the port of Leith which meant that the extended New Town became suitable for industrial enterprise. In particular the Silvermills and Canonmills, traditionally small scale craft-based metallurgical sites, were transformed into large industrial concerns often dirty heavy industrial plants as a result of the area's good connections (Oliver and Boyd, 1861; Littlejohn, 1866) The demand for labour prompted much new housing. The area was consequently less appealing to the middle classes who left their fairly spacious tenement flats. The Dean of Guild's record (and the valuation rolls) indicate substantial amounts of former middle class properties were subdivided to house several families. This phenomenon was particular apparent in Cumberland Street along with extensive in-filling.

Thus, the capitalist structure imposed itself on an area which not only transformed the physical space, but changed the social characteristics of the area. Class consciousness arrived with the industrial capitalism, which also meant a very mobile population (see chapter six). Furthermore, the new and adapted houses meant the housing market was also responding to the changing structures and further enhancing the working class dominance of an erstwhile gentile area.

Cumberland Street provides an example of selective downgrading, but in a different way to that in the Old Town. Cumberland Street simply lost status; it did not become an over-crowded and noisome slum. Its character undoubtedly changed. It was a street that had served the grander parts of the New Town. Many of the servants, tradesmen and retailers for the well-to-do lived in Cumberland Street in 1851. However, the decline in domestic service coupled with the industrialisation in the area meant that

from a 'respectable' street for clerks and ladies' maids, Cumberland Street was a prime site for the upwardly mobile artisan.

The seven micro-areas discussed above have illustrated ways in which the factors of change at the meso-scale impacted upon the physical and social morphology of selected micro-areas. The industrialisation, the selective downgrading, infilling and suburbanisation noted provide the context for the agency factors of change to be discussed in the next chapter. But to consider just the spatial appearance and change of micro-areas is to ignore the social impact. Thus, in order to assess the micro-areas in terms of social change and its role in polarisation, the 'contributor' statistic is used in order to gauge levels of polarisation as they would have been experienced by individual agents living in these areas.

- SOCIAL CHANGE IN MICRO-AREAS

The discussion thus far has suggested that most change visible within micro-areas was influenced by the meso-scale (structural) factors driving that change. This, however, is only part of the story. Agents were the operators within the housing market and the ones whose perceptions of class and status were also, it has been argued, important in fuelling and directing this change. Thus, although it can be noted that the Grange, say, experienced extensive middle class house building, unless these houses were filled, there would be no socio-spatial change, just spatial change. In this sense agents responded to the building of new houses by moving to them; but they also created a demand for new houses to which the builders responded.

It is, therefore, important to consider how individual agents might have influenced socio-space, through their decisions about where to live. First, however, the context within which such decisions were being made requires some elaboration. Part of this context has already been outlined in terms of the changes to the burgh and the micro-units, the latter being especially important as it is these micro-units which represent

most agents' sphere of influence.[172] But the general level of agency activity within these EDs has not yet been gauged. One way to do this is to use the contributor statistic which gives an indication of agency activity in terms of social status group change within an ED and within the burgh.

Below tables 5.1 to 5.7 show the contributors for each of the EDs considered. The interest, however, is in its change as this points to social status composition change. When the contributor statistic changes it means one or more of the variables used to calculate the statistic is changing. This means that the proportion of a social group within the ED is changing with respect to the other groups in that ED, and/or that the proportion of a social group within one ED as a percentage of the city wide total is changing.[173] Thus, the contributor focuses on a social group within an ED in terms of what is happening to that, and only that, social group throughout the city.

The contributor can be a useful guide to change and point to levels of agency action in terms of population movement within the city and to and from the ED. The statistics below are most usefully considered in the light of what is now known about the structural changes within EDs, but extend the discussion to assess the effects of social change in a micro-area.

Table 5.1: The contributor for Fountainbridge 1851-1891:

YEAR	UNM	LNM	SM	SUM
1851	0.04223	0.16524	0.12289	0.17469
1871	0.03964	0.10547	0.14342	0.16047
1891	0	0.04151	0.20145	0.17903

Source: Census enumerators' reports and summary tables 1851-1891.

172 Agents whose sphere of influence extends beyond the micro-unit, for instance urban-gatekeepers, have been considered in this chapter as their action is deemed meso-scale. However, most agents sphere of influenced are confined to small area, or rather, their action is generally only discernible at the individual level, at the micro-scale, and hence why analysis of the agency factors of socio-spatial change are best suited to the micro-scale analysis in chapter six.

173 Consider the upper non-manual group in the Grange: a rise in the contributor indicates that the upper non-manual group represents a higher proportion of the total population of the Grange and/or, that the proportion of Edinburgh's upper non-manual households living in the Grange has increased.

Fountainbridge became a less important area of residence for members of the upper and lower non-manual social groups by 1891. The fall in the contributor points to the fact that these groups were either leaving the area, or being swamped by massive in-migration of skilled manual (or perhaps both). The significant changes in all of the contributors in this area suggests Fountainbridge is a dynamic area in terms of social group movement. This is in line with the physical changes known to be occurring in what was an area of transition and high industry. Such changes would increasingly become alien to the middle classes who might move on seeking greater residential respectability

Table 5.2: The contributor for The Grange 1851-1891:

YEAR	UNM	LNM	SM	SUM
1851	0.04096	0.07218	0.05353	0.05188
1871	0.31577	0.13756	0.04132	0.02649
1891	0.37735	0.28956	0.02451	0.00778

Source: Census enumerators' reports and summary tables 1851-1891.

Table 5.3: The contributor for Morningside 1851-1891:

YEAR	UNM	LNM	SM	SUM
1851	0.10695	0.09422	0.04802	0.05134
1871	0.22177	0.10503	0.05976	0.04252
1891	0.55436	0.11612	0.04930	0.02018

Source: Census enumerators' reports and summary tables 1851-1891.

The Grange and Morningside display some of the greatest changes to the contributor of the EDs considered for study. The upper non-manual in the Grange in 1851 had a very low contributor which implies that the number of residents of this group in respect to the whole city was very low. The reverse of this was true by 1891. The unskilled manual group displayed the opposite trend. The lower non-manual group's rise and the skilled manual group's decline were less dramatic but nevertheless significant. Given that this was an area targeted by urban-gatekeepers for middle class homes, as well as the foremost area of suburbanisation, the contributors here do not seem extraordinary. Morningside showed a similar trend although less dramatically so.

Table 5.4 The contributor for Ramsay Close 1851-1891:

YEAR	UNM	LNM	SM	SUM
1851	0	0.07340	0.13175	0.16601
1871	0.01985	0.03753	0.08676	0.09642
1891	0	0.00977	0.07191	0.06603

Source: Census enumerators' reports and summary tables 1851-1891.

The contributor falls in each of the social groups in Ramsay Close as the total population of all social groups in this ED is falling while their city wide totals are increasing. This means interpretation is fairly limited. All that can be safely concluded is that the area was becoming depopulated, but of those remaining most were unskilled workers.

Table 5.5: The contributor for The Colonies 1851-1891:

YEAR	UNM	LNM	SM	SUM
1871	0.26397	0..26816	0.19291	0.09479
1891	0.13548	0.15181	0.18710	0.09649

Source: Census enumerators' reports and summary tables 1851-1891.

With only two years shown, trying to discern a trend in the Colonies is rather dangerous. The dramatic declines in upper and lower non-manual groups, however, is significant. It does suggest a movement away from the area: and as the contributor for the working class groups do not dramatically change, the conclusion one can draw is that the increase to the area of this class is proportionate with their increase in the city.

Table 5.6: The contributor for Cumberland Street 1851-1891:

YEAR	UNM	LNM	SM	SUM
1851	0..30885	0.21721	0.13183	0.14945
1871	0.13245	0.13411	0.09614	0.08792
1891	0.18439	0.12682	0.19332	0.13523

Source: Census enumerators' reports and summary tables 1851-1891.

The large change in the contributors in Cumberland Street confirms it as an area of considerable change. The spatial changes highlighted in the above discussion are seemingly reflected socially in the contributor. The table suggests that the non-manual groups no longer generally regarded Cumberland Street as an respectable place to be living as it became increasingly inhabited by the working class - a fact the contributor for the skilled manual group seems to suggest. The contributor of the unskilled group is rather erratic meaning interpretation is difficult other than to say it was probably a rather mobile group in an area of high transition.

Table 5.7 below shows that Royal Circus remained an area that the non-manual groups remained in. The fall in the working class groups suggest that their population in Royal Circus as a percentage of their city wide population was falling. Thus, Royal Circus, was not reflecting the trend of these groups to be increasing. It can be concludes therefore the Royal Circus was not an area to which the working classes were moving to, indeed, the contributor suggest that they were resident in the ED in fewer numbers by 1891.

Table 5.7: The contributor for Royal Circus 1851-1891:

YEAR	UNM	LNM	SM	SUM
1851	0.58181	0.19670	0.01426	0.05960
1871	0.62150	0.16846	0.00842	0.06788
1891	0.64226	0.16517	0.00741	0.02266

Source: Census enumerators' reports and summary tables 1851-1891.

What has the contributor added to the understanding of socio-spatial change in Edinburgh? There are two broad conclusions to be drawn. First, the changes to the contributor suggest that the changes within the micro-areas examined were more than just physical or structural changes. The contributor measures the changes in the composition of a social group in an ED with respect to its city wide population. A change must mean that the ED became more or less attractive to a particular social group. Even Ramsay Close was considerably less attractive for unskilled workers

despite their dominance, simply because they were depopulating the area. Thus, a contributor change is indicative of a social change.

The second conclusion relates to what the contributor changes indicates in terms of agency action. Little can be said here other that to state that any change in the contributor is indicative of population mobility. When the contributor is viewed in the light of the physical changes already known then a securer conclusions about population mobility can be had. For instance, in Fountainbridge the significant industrialisation was likely to drive away the middle classes. The contributor suggests this to be the case. Thus, the contributor is setting the scene for the more detailed analyse of mobility to come.

The main problem associated with the contributor is the difficulty of applying the statistic directly to socio-spatial change. It is difficult to interpret. Thus care must be taken with its use. The practical limitations of the contributor are similar to those of the interaction index, namely that the boundary of the ED may affect the statistic along with the total number of units and the size thereof. Were boundaries drawn differently a different statistic would emerge, under- or over-stating the extent of the change observed above. Nevertheless, the important aspect of the contributor is the change in the selected EDs, the boundaries of which are constant over time so a temporal comparison is possible. A further limitation is the fact that the overall Edinburgh index is not known. Thus, it cannot be concluded whether an ED is reflecting the city-wide trend. This is one reason why a representativeness index was used in chapter four.

Three conclusions emerge from the analysis of micro-change in Edinburgh. First, micro-areas within Edinburgh, at least in terms of enumeration districts, were increasingly becoming dominated by specific social groups. The excessive under- or over-representation of social groups in particular EDs suggest this. If this was a city wide phenomenon, then socio-spatial polarisation increased. Second, that the spatial changes within the micro-areas were related to the meso-scale structural factors of

change such as the housing market, industrial development and the growth of class consciousness and the actions of agents in response to this. Third, as well as morphological change, social status changes within EDs suggest that more than structural factors were at work resulting in the increased polarisation. Thus, Edinburgh was a dynamic city of change. But was its size a factor in its dynamism?: would a smaller burgh have similar levels of change? This can be partly answered by considering Perth.

5.7 MICRO-AREA CHANGE IN PERTH

In the above discussion the structural changes and agency responses within selected micro-areas of Edinburgh were considered. Perth, a much smaller settlement than Edinburgh, may be considered to be less dynamic and less polarised. Yet, chapter four revealed that socio-spatial change in Perth was evident in the late nineteenth century and that it was likely also to have resulted in residential segregation. This section can advance further the understanding of that socio-spatial change, and assess the changes in Perth, and their extent, in the light of what is now known about Edinburgh.

Perth was divided into twenty-seven EDs, six of which have been selected for a closer examination. This selection was based on providing a good representation of all areas of Perth. Like Edinburgh Perth has an old mediaeval core, a Georgian development and industrial and residential Victorian parts. Each of these are considered along with an area of peripheral growth (suburb seems too strong a word for Perth). The analysis which follows below of six EDs is made easier for Perth as the overall city interaction index is known (see chapter four) and so the 'contributor' provides an additional insight into socio-spatial change, namely the degree to which an ED change reflected the city wide change. Before this is considered a brief discussion of the structural changes to the areas is needed to explore the effects of structure / agency interaction and provide a context for the agency action within the micro-areas of Perth.

The Barossa Place ED is part of late Georgian Perth and a street with grandly facaded houses and formal gardens interspersed with much Victorian terraced development. In character it is not dissimilar to Cumberland Street in Edinburgh: it also shared some of the dynamic characteristics. By 1891 there had been extensive Victorian development which had largely altered the area (Findlay, 1984; see also the Dean of Guilds Minute Book for Perth from 1873). From being a graceful redoubt of the gentry it became an area of petty officials. It was close to the North Inch which made for good walks, fine views and a healthy lifestyle.[174] Barossa Place experienced some of the most extensive structural changes within Perth in terms of house building. Perhaps the peripheral location is one reason for this (fringe-belt and fixation line theory) or simply because Perth needed to cater for a growing middle class market and their housing needs. The effect of the new housing was a lowering of status of the area. The Victorian built dwellings soon swamped the grand Georgian townhouses, many of which were sub-divided or turned into offices.[175]

The Craigie ED was peripheral and not dissimilar to Morningside in Edinburgh in the sense that it was transformed from a completely rural area to a suburban estate. However, the amount of building was much lower here and the grandeur of the houses were less compared to the capital. Furthermore, it was in Craigie and Upper Craigie (former hamlets subsumed by the growing burgh) that substantial building for the 'respectable' working classes was undertaken from 1860 onwards. This followed the same sort of pattern to the Colonies in Edinburgh, but certainly not in the southern suburbs. However, the Perth scheme was not built by a housing co-operative but by a city corporation - the Glovers.[176]

Perth did not suffer from the same level of overcrowding as parts of Edinburgh did, and there is less evidence to suggest that the skilled workers objected to residing in

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[174]The Perthshire Courier advertised houses for rent and sale. They were often described for this area as 'commodious' (Perthshire Courier, August 1876) 'select' or 'well-situated' (March, 1880).

[175]The valuation rolls over the period 1861 to 1891 reveal extensive subdivision of property.

[176]The Glover Corporation was the closest Perth had to a livery company. The ancient trades of Perth all had corporations, most of which were similar to trades unions. By 1850 little in the way of gloving remained, and the corporation had become a mutual society.

areas increasingly populated by the unskilled groups (see chapter four). But as the years went on it is likely that Perth did succumb to heightened class consciousness (as the indices of residential differentiation pointed to a polarisation of social groups). Most housing development in Perth was designed for the professional and lower non-manual status groups, but the building of houses on Glover Road in Craigie was an example of model dwellings for artisans. They were similar in design to the Colonies in Edinburgh, and provided a respectable area for the labour aristocracy. Two thirds of the houses were originally inhabited by skilled workers but, unlike the Colonies, no formal scheme was put in place for occupants to buy property, although some did. Another curious difference is that, while in the Colonies the skilled manual social groups increased their polarity, in Glover Street, it was the in-migration of lower non-manual households that made the area almost exclusively *petit bourgeois* by 1900 with few skilled workers and no unskilled households at all.[177] One possible explanation lies in the fact that most of houses in the street became owner occupied towards the end of the century and perhaps it was only the lower non-manual group that were in a position to afford the upset price, about £200.[178] Once it had begun to be seen as a middle class area, the skilled workers moved or were priced out, the capitalist housing market again working against them, or an early example of gentrification!

The 'gentrification' of Craigie is probably the result of an influx of middle class households escaping the city centre as the changing character of the High Street may have influenced many of the professionals to leave the area. Stavert (1985) notes that the High Street changed from a mix of craftsmen and merchants in the 1830s to a significantly industrialised part of the burgh by 1900. Industrial capitalism had arrived at Perth. The High Street in 1851 had been a mixed area of administration and merchant enterprise. Compared to Edinburgh's High Street it was spacious and clean - but this reflects the lower population. The growth of the population of Perth and in particular the action of house-builders, meant that the working classes were restricted

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177 This is confirmed from the valuation rolls for this area.

178 The Glover corporation owned extensive land in Perth and in the early twentieth century feud plots to suburban builders. Much of the information presented here on the Glover Corporation is from the Annals of the Glover's Incorporation edited by Wilson (1985).

to the central areas. Few of the peripheral estates to be built during the Victorian period were for workers. Thus, the transformation of the peripheries of Perth into areas of middle class housing meant that in-filling and new housing in central Perth was carried out.[179] The development of central Perth changed the character of the area. Although much administration remained around the courthouse and City Chambers, much of the merchant activity was replaced with unskilled industrial enterprise. The ancient crafts of Perth declined - a product of the mass production era

Although the High Street was becoming increasingly industrial, the main area of industrialisation, however, was around the railway station. Perth was a major junction and became a central depot for freight as well as a nodal point for passengers changing trains. As part of the national rail network, and with the facilities of a navigable river close by, Perth's small industrial expansion took off. It was nowhere near the scale of western burghs or Dundee, but the new industries (essentially rail engineering, iron, and textiles), did change the character of the town and brought with it an increasing number of unskilled workmen. The former 'trades' of Perth suffered accordingly. Wilson (1985) laments that by 1900 few of the ancient trades of Perth were practised: in their place were dyers, bleachers, and railway labourers. The structural changes and consequent diversification of occupations is a factor which may have contributed to an increased class consciousness in Perth and a fact which may have led to the socio-spatial polarisation identified in chapter four. Agents not only demanded places to live but also made residential decisions which house suppliers, such as the Glovers Corporation, responded to.

The area around Perth station was one area that working class residents began to occupy in large numbers towards 1900 as extensive house building was carried out - much of it by the railway company. Stavert (1985) claims that the area around the station was the only part of Perth where housing speculation occurred. However, there is little documentary evidence in the Sasines to support this. The Dean of Guild's

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[179] Dean of Guild Minute Book March 1877: permission was granted for several new roads to cut perpendicular across the existing street pattern. The new roads included Scott Street (Findlay, 1984).

Register does, however, provide evidence indicating substantial clearing of older property and the construction of new roads leading to Craigie. One such was Earl's Dyke, formerly lined with agricultural cottages. By 1870 it was tenemented. The Sasines record specifies conditions for the dimensions of the flats and their upkeep. Subtle distinctions, such as architectural ornamentation, were to single these out from the tenements of less well off workers. This subtlety reveals that class consciousness penetrated deeply and differentiation was important.[180] This may suggests that social stratification within classes was as prominent as between classes. It also shows how agents responded to class consciousness. House builders offered something slightly different to those workers prepared to pay a little more for their accommodation, thus reinforcing social distinction and highlighting the use of consumer devices.

The station area of Perth thus became increasingly polarised from the other traditional skilled working class areas of the city centre. Here the unskilled found themselves increasingly separated from other groups because of the downgrading of the area. Little improvements had taken place in central Perth and evidence that considerable infilling behind larger properties took place is contained in the valuation rolls. Except for a small area around the High Court and parish church, central Perth was almost empty of the higher social groups, unlike Marshall Place, to where some may have moved.

Considerable change occurred in Marshall Place ED between 1851 and 1900. Two new roads were built on to it which brought new people to the area - the houses were much smaller than the existing ones and the new residents were unlikely to share the wealth nor the status of the existing inhabitants. This seems a curious occurrence therefore. In fact, the railway bisecting the area and the once highly respectable area became 'tainted' with the industrial age. Thus, it becomes easy to see why the area went through a form of selective downgrading. Marshall Place was a row of Georgian townhouses overlooking the South Inch. Many of the large houses were converted in

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180 Perth Sasines: 1876 625:147-152; 1881 323:165.

flats or offices and the area become suited to clerks and merchants because of its proximity to the centre of town.

The changes in the micro-areas of Perth are in most cases as significant as those in Edinburgh and are being driven by the same meso-sale factors of housing market operations, industrialisation and class consciousness. Of course, as with Edinburgh, agency factors need to be considered in more detailed and this will be done in the next chapter. The social changes outlined in Perth have thus far been largely linked to changes in the built environment. Marshall Place, for example, underwent substantial physical changes with new roads and house conversions, but the question still remains: how can the levels of agency response, and agency driven factors of change be assessed? As with Edinburgh the contributor can be used to assess the extent of social change.

Table 5.8: The contributor for Barossa Place 1851-1891:

YEAR	UNM	LNM	SM	SUM
1851	0.1159	0.0614	0.0352	0.0480
1871	0.0952	0.0768	0.0423	0.0383
1891	0.0774	0.0629	0.0401	0.0359

Source: Census enumerators' reports and summary tables 1851-1891.

Armed with the index of inter-action for each of the social groups in Perth (see figure 4.13), the interpretation of the contributor figures is easier for Perth than for Edinburgh. In table 5.8 it can be noted that, by 1891 there is a decline in the upper non-manual and unskilled manual groups' contributor. Both of these groups have a falling interaction index meaning higher polarisation of these groups within Perth.[181] These two facts mean that Barossa Place was less favoured by the extreme groups in the social status typology. Either their numbers in Barossa Place were in decline, or their numbers elsewhere in Perth were increasing disproportionately. Both cases suggest social change, most likely through mobility. The rising contributors of the

[181] In fact the declining inter-action index means there is less chance than a member of one group will share an area with a member of another group.

lower non-manual and skilled manual suggest the opposite trend. Given what is known about the new houses built in this area over the period 1851 to 1891, this is unsurprising.

Table 5.9: The contributor for Craigie 1851-1891:

YEAR	UNM	LNM	SM	SUM
1851	0.0457	0.0154	0.0150	0.0906
1871	0.1790	0.0458	0.0337	0.0302
1891	0.1492	0.0495	0.0339	0.0119

Source: Census enumerators' reports and summary tables 1851-1891.

Craigie was an area which grew in appeal to the middle classes. The contributors were rising in line with the increasing polarisation in Perth. It can be argued convincingly, based upon the rising contributors, that it was to areas such as Craigie that the middle class groups were moving and thereby increasing polarisation within the town. The skilled manual increase initially reflects the building of the model dwelling, but its later stability means that the decline of this group in Perth was proportional to the decline in Craigie.[182]

Table 5.10: The contributor for Station 1851-1891:

YEAR	UNM	LNM	SM	SUM
1851	0.0870	0.0724	0.0712	0.0906
1871	0.0233	0.0853	0.0721	0.0764
1891	0.0090	0.0419	0.0871	0.0695

Source: Census enumerators' reports and summary tables 1851-1891.

Social change in Station is indicated in the above table by the dramatic falls in the contributor of the middle class groups. This can be interpreted as meaning that these groups were increasingly favouring other areas, because, despite rising in numbers in Perth as a whole and polarising, they were contributing less to this trend. The less than

182 As the skilled manual group did decline in absolute and proportional terms throughout Perth, a rise in the contributor between 1871 and 1891 would be indicative of a proportional increase in the skilled manual group in Craigie. This, seemingly, did not occur. A fall i the contributor would represent a disproportionate decline in the composition of this group ion Craigie, with respect to their total composition in Perth.

dramatic increase in the skilled manual group is nevertheless significant given this group's overall decline in the burgh. The high structural changes in this ED are clearly reflected in the changes to the contributor, implying a relationship here between high agency activity and high levels of structural change.

Table 5.11: The contributor for High Street East 1851-1891:

YEAR	UNM	LNM	SM	SUM
1851	0.0268	0.0277	0.0237	0.0285
1871	0.0230	0.0163	0.0276	0.0289
1891	0.0045	0.0135	0.0282	0.0240

Source: Census enumerators' reports and summary tables 1851-1891.

A similar trend emerges in High Street as it did for Station, in terms of the upper and lower non-manual groups. The generally static contributors for the skilled and unskilled groups suggests that the ED generally reflected the proportional increase and decrease respectively of these groups in the burgh. It also implies an outward movement of the higher status groups and an inward movement of the lower, although this can only be suggested and not confirmed by the table above.

Table 5.12: The contributor for Marshall Place 1851-1891:

YEAR	UNM	LNM	SM	SUM
1851	0.0650	0.0201	0.0074	0.0094
1871	0.0488	0.0261	0.0131	0.0069
1891	0.0425	0.0287	0.0215	0.0065

Source: Census enumerators' reports and summary tables 1851-1891.

Finally, in Marshall Place the lower non-manual group shows a slight increase, while the skilled manual shows a large increase. The changing character of the area may explain this as more working class houses were built and there was extensive sub-dividing of property. This ED, once heavily dominated by the upper non-manual group, was changing: the highest social group's contributor declined which means that this ED was not contributing to their polarisation Perth as much as it used to - indeed this group was moving to the suburbs.

The contributor statistics for Perth have only been briefly analysed as what they can reveal is limited. Nevertheless they do point to social change in terms of the ways in which social status groups comprised the ED and with respect to what the group was doing throughout the city. Knowledge of the inter-action index has also meant that more has been concluded for Perth than for Edinburgh, although it must be stressed that a detailed micro-scale analysis of agency factors of change is required to make any certain claims about the role of agency in socio-spatial change. The contributor has, at least, indicated that more than structural changes were occurring in micro-areas, indeed, agency activity seems to be high, especially in those EDs, like Station, where structural changes were greatest.

The conclusions noted for the micro-area change in Edinburgh generally hold for Perth as well, and the size of the smaller settlement appears to be no bar to the levels of dynamism and extent of change within Perth or its micro-areas. Certainly micro-areas were becoming increasingly socially specific which resulted in a mosaic of increasingly polarised areas within the burgh. Furthermore, the changes within the micro-areas were influenced by the meso-scale factors of change within Perth, especially the housing market and industrialisation and social status changes, along with the fluctuations of the various contributors for the EDs, suggest high levels of agency activity within micro-areas and across the city.

5.8 CONCLUSION: SOCIO-SPATIAL CHANGE AND THE PROBLEMS OF ANALYSIS

Chapter four had concluded by indicating that socio-spatial change had taken place over the course of the second half on the nineteenth century in Edinburgh and Perth, and that this change took the form of increased residential segregation. Following on from this, this chapter furthered the understanding of this particular change. It did so by first examining the factors of change within the city. This was necessarily a meso-

scale discussion, which tended to highlight the structural factors driving change, such as the housing market and class consciousness. Both of these factors operated in complex ways. The operations of the housing market varied considerably owing to its diversity. There were many sub-markets, tenure types and vested landed interests. Nevertheless, some of the key factors which were influencing socio-spatial change have been outlined. Particular attention was paid to control of the housing stock, feu-charters and model dwellings, and their influence on socio-spatial change.

The capitalist housing market was itself driven by the profit motive but exploited the opportunities afforded not only by land availability but by the growing population, especially in Edinburgh. This population, it has been suggested, became increasingly class conscious during the course of the nineteenth. In this chapter, discussion of class was generally restricted to the interplay between class and the housing market, and class and agency behaviour. Little attention was paid to other aspects of class and its political dimensions. Nevertheless, since class (or social status) analysis plays are very important part in this thesis, some attention must be paid to the difficulties that are associated with class analysis and interpretation.

Class is a notoriously difficult concept which requires careful definition (Harris, 1984), but it is the definition of class which is the difficulty (Dennis, 1984). In this thesis class is viewed as a structure which constrained and was used by agents. This action in turn reproduces the class structure, in a manner referred to by Giddens (1973) as class structuration. The action of agents within a class structure, Giddens believes, is mediated or proximated by a series of class relationships which are themselves mediated through factors which intervene between capitalist market capacities and the formation of classes as identifiable social groupings. Giddens believes that the mediate structuration of class relationships is governed by the distribution of mobility chances, both social and socio-spatial. The market capacities to which he refers relate to the control and ownership of property, the means of production and the possession of

education, technical and manual skills. These then relate to the basic three tier system of upper, middle and working class.

Giddens also believes that class is proximated in three ways: through the division of labour, through mobility chances and through consumption patterns. These have the effect of reifying the distinguishable features of class formation. In sum, 'the combination of the sources of mediate and proximate structuration creates a threefold class structure [and] is generic to capitalist society' (Giddens, 1977 p.65). Gidden's view, then, combines both the structural elements of determinist class theory, with the 'proximations' of the agent-focused, behavioural approaches which recognise that agents' actions are not determined by class. He recognises that agents use the class structure for their own ends, when, for example, making their own residential decisions. This usage reproduces the class structure and the inter-class relationships. Moreover, the control of the factors of production, housing market and the levels of opportunities available to move (socially or socio-spatially) mediate agents' action. Such mediation results in class polarity as it heightens class awareness and the differences between classes.

Giddens structurationist view of class undermines the traditional dichotomy between structuralism and determinism. However, it has a tendency to view classes in a rather formal way as though class is defined solely in terms of economic relationships. But surely classes, if they are social realities, will display common patterns of behaviour and 'styles of life'. Style of life is often used to distinguish classes or status groups (Gray, 1973) but it is also the principal determinant of class consciousness. Class consciousness begs the question of the existence of another or other classes, however vaguely defined. Associated with this is class identity which implies cognisance of characteristics which separate the class of an agent from that of others. Thus, a central problem of class analysis becomes: on what does the researcher base his or her definition of class and class identity in circumstances where evidence of the perceptions of individuals is lacking? The general sources available tell the researcher

little of the feelings and self-identities of agents. Some biographic material does exist, but this is often confined to the middle class, who kept diaries and records more diligently than their working class counterparts (Gordon, 1979; Pooley and Turnbull, 1998).

The scarcity of direct evidence means that indirect evidence must be used to supplement what direct evidence is available. The census, rateable value records, and valuation rolls can all be used to define a social group, or a class, but must be done using occupation rent as variables. This often makes the researcher slavishly dependent on certain official data, which were often collected for financial or administrative reasons and not to conduct social enquiry. The detailed social questions are missing and this means that an important element of class analysis is missing - namely the individual's class perception of himself or herself and of others.

There is a danger when using official data of viewing class as a static categorisation, or as a social snapshot of a particular year. Class was not like this. It was a fluid classification based upon social relations (Kearns and Withers, 1991). As such classes only have meaning in their mutual interaction. Such relations cannot be inferred from solely an occupational label, hence the need for additional determinants. Class was, after all, not the only way in which society was differentiated or defined, although as Withers (1991) concedes it was the dominant categorising force which cut across race, religion and ethnicity. What it could not subsume were gender relations. Nevertheless, spatial differentiation rarely occurs along gender lines as it can through class or race - micro-areas solely comprised of females did not exist. But gender is a critical consideration in socio-spatial research on the second half of the nineteenth century, mainly because of the way women were excluded from much of the data.

The census and valuation rolls took males as default heads of household, regardless of whether the man was the breadwinner. This means that in this thesis, as well as elsewhere, using occupations of heads of households, excludes many women from the

statistics calculated. Thus the significant contribution made by women to industrialisation and the prosperity of the economy is overlooked (see Nash, 2000). In Edinburgh and Perth, twenty percent of heads of household were women: nearly half of these listed no occupation. This is a significant omission. Greater problems would have arisen in a study of a burgh such as Dundee (or even Glasgow) since women workers in the jute industry were often the major bread winners of the household (Gauldie, 1979). The extent to which women are overlooked in historical studies of socio-spatial studies requires further research, not least to establish the specific contribution they were making as agents to residential decisions and ultimately socio-spatial change. The emphasis on class in the discussion of this thesis should not be interpreted as a denial of the importance of gender relations in the late nineteenth century but rather as a limitation imposed, in part, by the nature of the project and the data sources used in the analysis. Even the concept of class, as a set of fluid social relationships, cannot be fully captured within the constraints of the extant data. For instance, the process whereby 'economic classes' became 'social classes' is still an area not fully understood.

This thesis has advanced the idea that structural factors and agency together led to socio-spatial polarisation. In other words, the underlying structures in society alone were not responsible for that change, simply because agents were not only conditioned by structures but acted within them. Thus, agency action *along with* the underlying structures led to socio-spatial change. This point can be illustrated using migration as an example. Migration represents agency action often in response to a structural stimuli, for instance an increase in class consciousness. This stimulus (class consciousness) is inseparably linked with the action of moving. Part of the understanding of agency action is to understand the context within which such action is undertaken.

The second part of this chapter attempted to achieve an understanding of this context by considering the physical changes to the selected micro-areas - the arena of agency

decision making. It was demonstrated that these changes within micro-areas were influenced by meso-scale structural factors such as the housing market. Thus, it can be postulated at this stage from what is known in Edinburgh and Perth that the structural factors within each burgh were driving change at the micro-level and, since the micro-level pieces make up the urban mosaic, the meso-level as well. But the contributor suggests that this is not the whole story. The social changes indicated using the contributor suggest also significant agency action. The analysis of the action of individuals is best suited to the micro-level where individual decisions and their effects can more easily be discerned. At the meso-level this becomes difficult. From the evidence suggested in this chapter the meso-scale structural factors are not solely responsible for socio-spatial change. Attention must now turn to the agency factors of change, in particular how they relate to the meso-scale structural changes, in order to complete the understanding of socio-spatial change in Edinburgh and Perth.

CHAPTER SIX

SOCIO-SPATIAL DYNAMICS - MIGRATION

6.1 INTRODUCTION

Chapter four has shown that the industrial revolution had brought profound changes to the internal space of Perth and Edinburgh. These changes took the form of socio-spatial segregation. The factors driving change were explored at some length, in particular by asking how they effected change at the meso-scale. Thus a picture emerged of how class, place and capitalism influenced the meso-scale socio-space in terms of the housing market, class consciousness and the growth in industrial capitalism. In order to advance the understanding of how these factors influenced meso-scale socio-space through social polarisation, analysis narrowed to the micro-scale where the spatial impacts of these factors of change were outlined. The analysis of over- and under-representation of social groups showed that micro-areas were becoming socially more polarised and, furthermore, that micro-areas were undergoing substantial physical change as a direct result of meso-scale influences. Thus, micro-areas were polarising socially and changing physically. But is it enough to conclude that the polarisation of the micro-units was influenced by structural factors and physical changes? Previous research, in particular Marxian analysis or the work of urban morphologists, would tend to argue yes; structural factors alone are responsible. However, this is to assume a somewhat partial interpretation of socio-spatial change, ignoring the role of human agency. Thus, the contributor statistic was used to give a broad indication of agency activity, suggesting that there was more than structural factors effecting change. The present chapter thus extends the previous analysis by assessing the way in which agency factors, as they interacted with structural processes, also contributed, to socio-spatial change.

The previous chapter began the consideration of agency activity by examining the role of urban gatekeepers whose actions influenced city-wide patterns of change. It now provides the context within which the action of ordinary individual residents can be introduced to the analysis. Any agent's decision making and actions are influenced by their environment, which is itself a product of the meso-scale reflexivity of structure and agents. For the average citizen of Victorian Edinburgh and Perth, however, first-hand knowledge of the city would have been limited and decisions about where to live or whether to move house would have been made in response to spatially circumscribed local environments - the micro-units of the city. This chapter will consider the ways in which these agents acted in relation to the changes that occurred within the burghs but how, at the same time, their actions were driving that change. This brings the analysis full circle: in the previous chapter the ways in which micro-areas were influenced by meso-scale factors was considered; in this chapter the ways in which micro-scale factors were influencing the meso-scale picture are assessed.

Residential decision making and migration are the principal actions of interest. The vast numbers of such decisions being made and the different forms migration took (in terms of distance, duration, frequency) need to be considered. Deciding to move house is a complex process rarely recorded by the household involved, making it impossible to reconstruct fully the perhaps idiosyncratic rationales. Thus, the historical researcher must rest content with drawing general references from patterns of residential change, supplemented where possible with information about individual moves. Examining the turnover in a particular area of the city can, for example, reveals not only levels of mobility, but also changes in social composition. Where these changes result in greater social homogeneity, they contribute to socio-spatial polarisation within the city as a whole. Further, plausible rationales for movements out of and into the area can be suggested using supplementary sources of information and informed by the theoretical ideas of the structuration grid.

Investigating the role of intra-urban mobility in socio-spatial change is thus a complex task and not only because of the lack of direct evidence. Additional difficulties are encountered in the areal units to assess levels of mobility, since turnover measures include not only migrants but also those who die. Moreover, the absence of detailed mortality data at the ED level means that accurate adjustments for loss through death cannot be made. In theory, heads of households dying could lead to an empty property (if the head of household was in single occupancy) or a move away by the deceased's family. From the archival analysis carried out for this chapter, however, both single occupancy and the moving of widows immediately after the death of a spouse appear to be rare in Edinburgh and Perth and so, the direct impact of mortality rates on turnover was probably low.

Nevertheless, in the analysis of the EDs which follows, attention is paid to the possible impact of mortality on turnover rates, as this is likely to have varied between areas. For instance, an ED with an increasingly older age profile could be expected also to have a higher death rate - although this is complicated by the fact that the higher social status groups generally had higher life expectancy. Thus, the Grange may have a older age profile than Ramsay Close, but life expectancy differed between the two EDs by several years. Littlejohn (1866) provides some data on crude death rates which can be used as a broad guide to mortality levels, but only for the year 1863. Generally, to adjust for the direct impact of mortality rates, in terms of number of heads of householders dying each year leading to a move, is impossible given the data limitations. However, what is known about social and spatial differences in mortality will be taken into account in the interpretations of the turnover analysis which follows.

In the following sections, mobility analysis of selected micro-areas in Edinburgh and Perth is presented. These are the same areas chosen for study in the previous chapter. The analysis assesses the agency factors driving socio-spatial change, after which there is a refection on the method of analysis and the conclusions that can been drawn.

6.2 MIGRATION AND SOCIO-SPATIAL ANALYSIS

Residential migration as a modality of structure / agency interaction is the mechanism whereby the character of social areas is maintained or disrupted. Further, social areas provide the context and arena in which agents make decisions about residential location and subsequent mobility (Dennis, 1984). For Edinburgh and Perth, this context has already been examined in the final part of chapter five. A structuration duality now becomes apparent - migration is an agent response to a structural stimulus which affects socio-space; in turn this socio-space further influences agency decisions. This duality has often been overlooked in past research. Migration's role as part of this duality and in the changing socio-space is, therefore, both a highly influential one and worthy of detailed study.

High levels of intra-urban migration do not in themselves mean high levels of socio-spatial change. Lawton and Pooley (1978) show that certain socio-economic groups had higher residential persistency (and so lower turnover rates) than others - the lowest socio-economic group in nineteenth century Liverpool was found to have been the most mobile. From evidence in Edinburgh and Perth presented below this is confirmed, since, of the four broad social groups analysed, the unskilled social group was the most mobile. Yet, Edinburgh EDs with high levels of unskilled households, whilst experiencing high levels of mobility, do not necessarily show correspondingly high levels of changes in socio-space. This is highlighted in Ramsay Close amongst the EDs considered in this study. Thus, rather than high levels of mobility disturbing socio-spatial patterns, the important consideration for a study of socio-spatial change must be the form this mobility took within the city. Again in Ramsay Close, the annual turnover rates, often over thirty percent, failed to impact on the socio-spatial structure of the ED because in-migrants of the same social status group replaced the out-migrants. In contrast, over the period 1855 to 1871 in the Grange ED the type of movement which took place was an out-migration of unskilled and skilled manual households and an in-migration of non-manual households. This altered the social

structure of the area and was in line with the structural changes taking place in this ED and the response thereto by agents which together led to socio-spatial polarisation.

Mobility, at the micro- and meso-level, is often the result of decision making by agents in response to structural stimuli, as in the case of the Grange. In this way, the decision of agents can be seen as part of a network producing urban change. Migration can, of course, be brought about by wider structural changes to the economy - this happened as a result of industrialisation (see Pooley and Turnbull, 1998, pp. 257-274). There was a widespread move to the towns. But once in towns, migrants often responded to more local structural stimuli (such as the characteristics of the housing market) which altered the socio-spatial pattern of the town (Lawton and Pooley, 1978 p.77). Thus, migration is both a cause and an effect of structural change. The significance of this lies in the scale of analysis. At the macro-scale, migration is a response to the structural changes within society and the economy: at the meso- and micro-scale it is the mechanism whereby the socio-space of the town changes. This is why mobility must be considered at different scales in order to assess its spatial impact.

Generally, levels of migration within the town should be highest in areas of socio-economic transition (Short, 1996). It is to such areas that migrants move, and from them that the 'succession' of periphery-ward movements begins. Burgess (1925) was one of the first people to explain this. He did so using the concept of a transition zone.[183] Figures 5.9 to 5.12 in the previous chapter pointed to areas in Perth with the greatest levels of socio-spatial change in terms of representativeness: it was in the 'area of transition', around the central part of the burgh, that the highest levels of change were discerned over time. It was here within Perth that renewal of buildings,

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183 Here, the 'invading' migrants would settle before moving out into successive zones. The area of transition was the area of greatest structural change, as well as the area of reception. Hoyt (1939), although modifying the claims of Burgess, also adhered to a transition zone, based on empirical evidence from forty American cities. Other authors prefer terms such as fixation lines and fringe belts (Conzen, 1960, 1981a; Whitehand 1974, 1981b, Carter and Wheatley, 1979). The Old Town of Edinburgh had definite fixation lines. These were overcome by great works of engineering to the south. But the former lochs, both to the north and south, as well as the topographical features of Arthur's Seat and the castle, meant a distinct border remained. Nevertheless, to the south a fringe belt does exist. The New Town had fewer constraints in terms of fixation lines: the Water of Leith to the north and the Norloch - later the railway line - to the south.

new roads and a few new workshops were located (Graham-Campbell, 1994 pp 120-123). The population turnover was highest in these areas compared to the rest of Perth, as is made clear later in this chapter.

The zone of transition in late nineteenth century Edinburgh was also an area of constant dynamism. This zone was based largely on the industrial east end and the Fountainbridge / Haymarket area to the west, and the changes within the district, as Littlejohn (1866 pp. 13-16) states in his report, were largely the result of the new railway and the many new factories, mills and distilleries. The migration in Old Town and Fountainbridge reflects the transitionary nature of these areas. There were high levels of turnover in these areas.[184] Thus, a link becomes apparent between structural changes and levels of mobility (agency activity). In the next two sections, the selected EDs of Edinburgh and Perth are considered in some depth to show the ways in which agency factors fit into the meso-scale changes noted in the previous chapters.

6.3 MOBILITY, STRUCTURES AND AGENTS: EDINBURGH

Seven EDs have been selected for study representing, as best as possible, a cross-section of Edinburgh.[185] Mobility as part of the structuration process was both social and socio-spatial: the two became closer towards 1900. Agents who were socially mobile, often became socio-spatially mobile as they moved to an area perceived to be of higher status. Throughout the period 1851 to 1900 it was increasingly apparent in Edinburgh, as in other Victorian cites, that areas began to be associated with specific trades and industries, and particular groups of people (Gordon, 1979; Newsome, 1997). Such an association, insofar as can be demonstrated for Edinburgh, was aided by migration as this chapter shows.

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184 Very short distance migration, to a neighbouring tenement or house, was a regular feature of the Old Town. Often this was due to tenement flats being condemned, but sometimes out of choice when another flat became available. Generally, the same landlord owned a whole close, or an entire tenement block, thus making this sort of movement relatively easy (Rodger, 1986).

185 This are the same EDs selected for analysis in the previous chapters.

Table 6.1 shows population turnover rates for selected EDs in Edinburgh.[186] The highest turnover rates were in the areas with the highest proportion of semi- and unskilled manual workers, namely, Ramsay Close and Fountainbridge: the areas with the lowest proportion of this group, and the highest proportion of non-manual households - Grange, Morningside and Royal Circus - had the lowest levels of mobility. This indicates an association between social structure and mobility. This is made even clearer in the earlier years as turnover levels in Grange and Fountainbridge were nearer in the 1850s than at any other time. This was also the period when the two areas were closest in terms of their social status composition.[187] In the 1850s the Grange had a high percentage of agricultural labours in what was then pre-suburban farmland as its name suggests. Moreover, the higher in status an area became over time, the lower the levels of turnover recorded. This was the case in both the Grange and Morningside. This also points to links with life cycle stage, tenure and occupation. In Grange, for instance, the valuation rolls record high owner occupancy, which is generally considered a barrier to mobility (Pooley and Turnbull, 1998, p.242).

The Grange was also an area with a higher number of householders over sixty years old than the average for the city as a whole. This contrasts with Fountainbridge, a district with a larger proportion of younger householders (under thirty years of age) than the Grange, living mainly in rented property. Table 6.1 shows mobility levels much higher here throughout the period: this could be indicative of a readily accessed rented housing sector. Through analysis of successive valuation rolls,[188] a picture is built up of which social status groups are leaving, and which are moving in.

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186 Turnover has been calculated using the valuation rolls. The percentage refers to the households present in year one who were not recorded in year two, as a proportion of all inhabited dwellings within the ED. For example: in Fountainbridge between the fiscal year 1855/6 to 1856/7, 20.43% of residents recorded in 1855/6 were no longer resident in 1856/7. This figure does not include the rare occasions when property has moved from a deceased parent to a resident offspring, nor from one partner to another in the case of death. It does include intra-district movement. Not all years have been shown, since the aim is to attain levels of turnover at various points throughout the period rather than a continuos assessment.

187 In 1851, 42.6% of households in the Grange were of the unskilled manual group, and 4.2% were upper non-manual. The respective figures in Fountainbridge were 44.5% and 1.3%. Forty years later, Grange had 2.1% unskilled households and 24.9% from the upper non-manual. This corresponded with 46.4% and 0% in Fountainbridge respectively.

188 The census was also used to verify the information in the valuation rolls in terms of occupation of the residents, as the valuation roll data are not always as reliable as the census, with registration clerks often failing to note changes in the occupation of the head of household.

Table 6.1 % Population turnover in selected Edinburgh EDs 1855/6 - 1895/6:[189]

YEAR / ED	Fountain-bridge	Royal Circus	Cumb'd Street	M'side	Grange	Ramsay Close	Colonies
1855/6 - 56/7	20.4 %	16.0%	16.8%	10.2%	21.2%	na	na
56/7 - 57/8	20.1	15.2	16.3	12.8	20.5	na	na
57/8 - 58/9	18.0	11.6	18.94	5.2	7.9	na	na
58/9 - 59/60	19.1	13.3	18.0	5.2	15.7	na	na
59/60 -1861	18.7	12.7	16.27	7.9	10.3	na	na
1871/2 - 72/3	19.6	12.8	25.0	16.6	14.3	36.4%	16.1%
72/3 -73/4	18.2	18.1	21.1	7.0	19.2	34.0	17.0
73/4 - 74/5	14.6	15.3	21.3	6.9	9.6	28.5	22.6
74/5 - 75/6	18.7	13.8	19.1	10.3	7.8	25.8	15.7
75-6 - 76/7	na	14.0	18.8	8.3	12.0	24.9	18.0
91/2 - 92/3	20.6	9.8	17.9	9.7	10.2	25.3	20.4
92/3 - 93/4	15.4	11.6	20.4	4.9	15.2	24.4	22.1
93/4 - 94/5	19.2	8.3	17.0	7.5	8.4	23.5	20.2
94/5 - 95/6	18.2	7.7	16.2	6.2	6.7	19.3	17.7

Source: Valuation Rolls: na = no data available.

Table 6.1[190] shows that turnover rates in Edinburgh fluctuated over the years, and fluctuation was greatest in those EDs with highest levels of change to social composition. Grange and Cumberland Street show considerable oscillation over the years, whereas Royal Circus, which experienced limited change in social composition, remained relatively stable, at least initially. This further suggests an association between status and mobility. However, it was the type of migration which had a greater impact on the changing socio-status of an area. The graphs produced in this chapter for each ED show the net effects of population turnover on each of the social groups within the ED. Where there was net decline in a social group, the line for that group on the graph shows a negative position below the horizontal 0% axis, as with the lower non-manual line in Figure 6.1 for Fountainbridge. These graphs need an introduction to explain their use and applicability in the analysis.

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189 The turnover figure is the total number of household moves out of the ED expressed as a percentage of the total households in inhabited dwellings.

190 Only selected years have been shown to keep the table manageable. The idea is to given an indication of turnover rates in three different decades. The degree of representativeness of the years used may be questioned, although in figures 6.1 to 6.6 turnover throughout the period 1855 -1895 is illustrated.

There are two important points to make. First, in some graphs not all the social groups are shown because of the small numbers involved. In Figure 6.1 the upper non-manual group has been omitted because of the small sample size in Fountainbridge. The lines for each social group show the net effect of migration during the period in question on the total number of heads of households of the respective social group in year one - that is before turnover is calculated.[191] Because it is the form turnover took, rather than its levels, that is of concern, only the net effect on the social group is given rather than the numbers moving in and out of the ED. Figures 6.1 to 6.6 show, therefore, the net effects of population turnover on socio-spatial structure in an ED, and thereby give an indication of the form of population turnover and its impact on social composition.[192]

The analysis which follows demonstrates how an examination of micro-areas advances the understanding of the increased socio-spatial polarisation which took place within Edinburgh and Perth. Previous chapters have highlighted the ways in which (macro-scale) socio-economic factors influenced change within the city and its micro-areas; the attention of the rest of this chapter is to assess the role of agency in explaining the meso-scale socio-spatial change.

- *Fountainbridge*

The graph below indicates a high level of in-migration of skilled manual group household heads at the expense of lower non-manual and unskilled groups in line with the structural changes already identified (see chapter five). The net effect on the lower non-manual status group was consistently negative, indicating a gradual seepage out: this was not so gradual during the late 1850s and early 1860s. The skilled manual

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191 Net effect of composition is calculated by subtracting the actual in-migrants from the out-migrants and expressing the absolute difference as a percentage of the total population of the particular social group under consideration. This is shown graphically over time. When there is no net effect, that is in-migrants equalled the number of out-migrants, the graphs show the social status group line co-incident with the horizontal 0% axis. This does not mean that there was no turnover, but that its impact on socio-spatial structure was neutral.

192 Graphs are used rather than tables to give a sense of change over time. Where the net effect of turnover was to increase the proportion of a status group, the social group's line on the graph would show a positive position, that is above the horizontal 0% axis.

group were generally showing positive net effects, although with a significant fall between 1855/6 and 1856/7 for which the valuation rolls provide no explanation. However, new distilleries, a rubber factory and engineering works for the Caledonian Railway in the locality of Fountainbridge required men with notable skills. Consequently, a number of new tenements were built in this area specifically for skilled and 'deserving' artisans which had the effect of attracting agents from other areas and increasing socio-spatial polarisation.[193]

The ways in which Fountainbridge attracted certain agents to the area and the resultant increase in polarisation can be illustrated using some specific example. For instance, Arthur Mather, an engine maker who resided at 121 Fountainbridge in 1881, had previously lived at 68 Fountainbridge which, although in the same locale of Edinburgh, was in a different ED. In fact Mr Mather's move represented growing social prestige, as the premises at 121 were valued at a higher rate.[194] The joiner, William Laidlaw also saw the advantages of the higher numbers in Fountainbridge. He moved from number 70 to 128. William Wilson, a watchmaker, may have struck hard times. He had moved from Princes Street to 189 Fountainbridge. This might have been due to occupational specialisation, however, as a few precision instrument makers were located in the Fountainbridge area, although it was more likely to have been a response to the escalating rents in Princes Street where fashionable shops were becoming dominant (Grierson, 1938). William Beattie, a mason, was another refugee from the New Town - he moved from Frederick Street to Fountainbridge. It is difficult to find examples of residents who moved to Fountainbridge from the Old Town, as few were listed in the city directories which had a clear bias towards trades and the professions. However, there are several examples of clerks and lower non-manual employees moving to areas increasingly associated with the middle class. Andrew Pearson was a Clerk of Works in a nearby factory and lived in his tenement apartment until the mid 1860s when he moved to a new development in Murrayfield. Andrew

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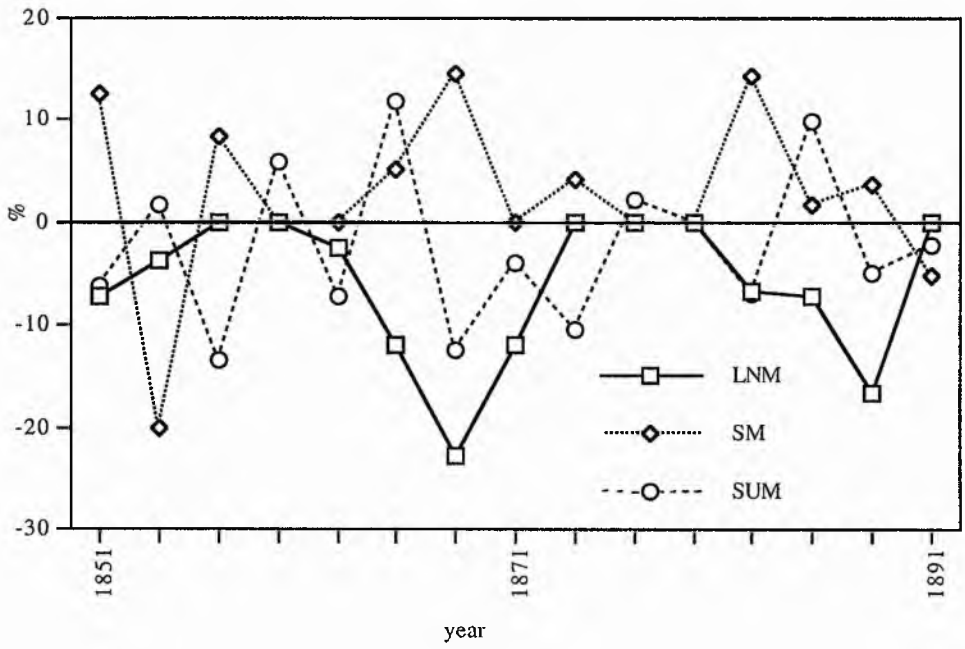
193 For example Chalmers Buildings were built along Fountainbridge in 1855 at a cost of £3600, to house twenty-nine deserving families (Littlejohn, 1866 p. 38-42). This influenced the consistent in-migration of skilled workers.

194 There is three pounds a year difference.

Sommerville of 55 Fountainbridge was a tax collector who may have shared some of Mr Pearson's aspirations. He too fled to more prestigious accommodation in Dean Village perhaps because of a feeling of being 'out of place'.[195]

Figure 6.1: The net effects (%) of population turnover on social status groups in Fountainbridge 1851 -1891:



Source: Valuation Rolls 1855/6 to 1894/5 and Census 1851 -1891.

Fountainbridge, it seems, was becoming a skilled artisans area, with a sizeable minority of unskilled workers. A glance at the composition of status groups in this area confirms this and suggests an increased in social segregation.

Table 6.2: Social group composition (%) of Fountainbridge: 1851-1891:

Year	Upper non-manual	Lower non-manual	Skilled manual	Semi- / unskilled
1851	1.3%	19.9%	33.3%	45.5%
1871	1.1	13.3	41.6	43.9
1891	0	4.8	48.7	46.4

Source: Census Enumerators' Report for Fountainbridge ED, 1851, 1871, 1891.

195 Post Office Directories 1871 and 1876.

Table 6.2 shows an increase in the proportion of skilled manual households. This had been suggested in figure 6.1 which points to a consistent in-movement of the skilled manual group to the ED. Table 6.2 also shows that the lower non-manual and unskilled group declined in their proportions: a further fact indicated by the turnover graph.

The turnover data above do not take into consideration the effects of mortality - this would have had an impact on turnover in a number of different ways. First, the crude mortality rate of Fountainbridge calculated by Henry Littlejohn in 1863 was 15.95‰[196] is lower than the Edinburgh average of 17.16‰ (Littlejohn, 1866). The impact of mortality within a single ED in the Fountainbridge area is rather difficult to ascertain (the selected Fountainbridge ED had only 120 households). An extrapolated calculation could be made based on the Fountainbridge area or Edinburgh total crude death rates but would be very unsafe. Furthermore, even if it is assumed that a head of household dying meant that the rest of the family moved, the impact on turnover would not be considerable in an individual ED. Simply applying the crude death rate for the district, for example, and allowing for a total population of 503 within the Fountainbridge ED, the expected number of death in a year would be around eight. Assuming that all residents were at an equal risk of dying, this translates into a maximum of two household heads dying on average per year. Since children experienced higher mortality than adults at this time (see Littlejohn, 1866), this probably overstated the annual mortality loss of household heads. It does, however, demonstrate that the mortality impact on turnover rates is likely to have been small.

More generally, the mortality of household heads varied according to the social status and age profile of areas. *Ceteris paribus*, an older age profile in an area meant a higher mortality rate. This is complicated however by social status as higher social status groups generally lived longer. Those in lower status areas would have had a lower quality of life, a higher instance of disease and, therefore, higher mortality rates than higher status areas. however, the lack of detailed mortality data permits only the most

[196] This is the figure for the population over five years of age; it is 83.33‰ for under five years of age and 25.2‰ for the total population Littlejohn (1866).

general assessment of the impact of these factors on turnover rates. The mortality rate used by Littlejohn (1866) for the registration sub-district of Fountainbridge, for example, covers around fifty EDs. Although the area was fairly homogenous, to assume each ED has the same death rates is stretching credulity a little too far. An indirect assessment of the impact of mortality is, however, possible if the links between mortality and the status and ageing of the population are first considered. These latter two factors are identifiable from census and other official sources. In the analysis of mortality in this chapter, although some death rates are presented, more attention focuses on the status and age profile change when mortality is discussed, rather than on estimating the number of deaths in an ED and the effect this had on turnover.[197]

Age profiles can be obtained from the census. The limitation with this is the ten year interval. In an area like Fountainbridge, few residents had that sort of staying power. Nevertheless, the turnover rates for census years into the next year, that is 1871/2 to 1872/3, for example, can be used to assess any differences in the ages of migrants. The median age of out-migrants from the Fountainbridge ED selected for study was 38 years, and nearly two thirds of those who left were under forty. By 1891, this had changed slightly: the median age was 41 years and just over fifty percent of those who left were under forty. Actual ages are not known for in-migrants, but successive censuses do not show any significant deviation to the existing age structure.

Table 6.3 Age structure of household heads (%), Fountainbridge ED, 1851-1891:

Year	0-20	21-30	31-40	41-50	51-60	61-70	70+
1851	0%	17.4	25.6	23.3	15.1	11.6	7.0
1871	0	16.5	26.4	24.2	16.5	11.0	5.5
1891	0.9	16.1	17.9	25.0	24.1	12.5	3.6

Source: Census enumerators' reports, 1851, 1871, 1891.

Table 6.3 shows that the age profile of Fountainbridge was consistent over time with perhaps a slightly ageing population. This is in line with Pooley and Turnbull's (1998)

[197] A further limitation of the mortality rates published is that they are not age specific. This means that they will tend to exaggerate the true extent of adult mortality. Only adult mortality, and more specifically heads of household, will directly affect population turnover .

observation that a higher age profile is associated with higher social status in an area. Furthermore, age is also associated with mobility - the young being more mobile as they have fewer commitments. The older, more established households may have reached the climax of their career or aspirations and are, therefore, less likely to move. In tables produced for the Grange and Royal Circus, this is apparent. A higher age profile does not necessarily mean a higher mortality rate, however, because social status is an important intervening variable. Crude death rates in the Grange were half those of Fountainbridge despite the former having a much older age structure.

Social mobility is important in determining the social structure of an area. It highlights agents trying to better themselves. This became increasingly possible under capitalism, compared to the older economic structures. The late nineteenth century was a period of great fluidity in the labour market (Cowlard, 1979). This is important as it has implications for both socio-spatial structure and mobility. An agent rising in social status did not wish to remain in an area perceived to be below his or her new-found status. But, without knowing the previous addresses of the in-migrants to the Fountainbridge ED, it is impossible to ascertain their occupations before moving. Despite this apparent drawback, there are a few assurances to be had. Because many skilled occupations required apprenticeships and training, it would be difficult for an unskilled worker to change occupation easily, upwards at least. Of course it is easier to move down in occupational status - a skilled joiner could become a road labourer. Furthermore, a few individuals have been traced owing to unusual names, or because they appear in the 'professions and trades' section of the Post Office Directory, and in all cases where an individual was traced, occupation remained the same.[198] Some individual migrants were mentioned earlier and more are considered for other EDs below.

- The New Town

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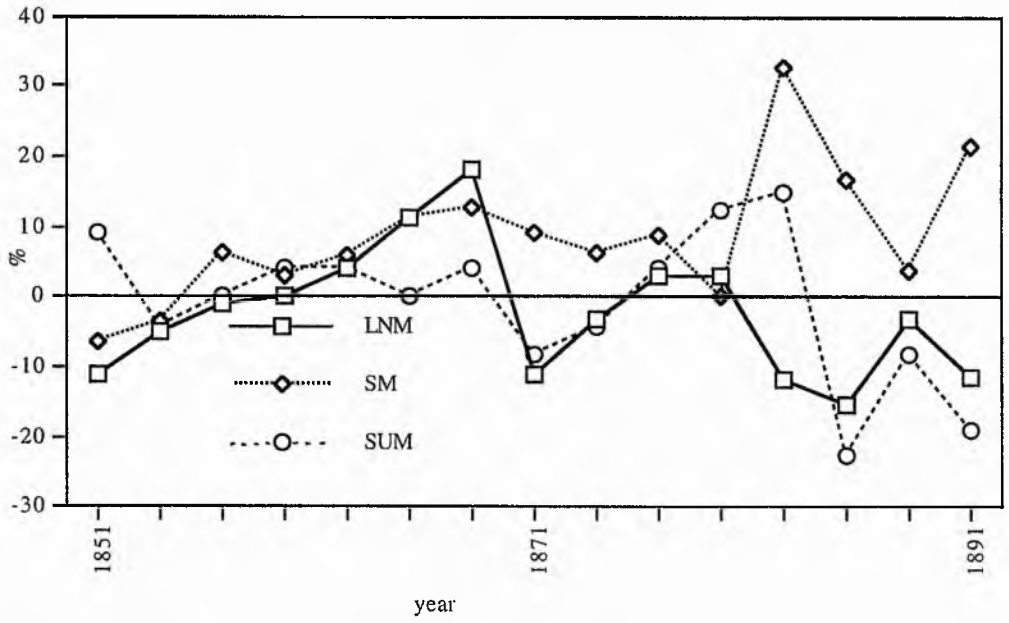
198 Over thirty tradesmen and professional were traced from Fountainbridge to other areas over the period 1860 to 1890. In all cases occupation remained the same.

Throughout the nineteenth century, Edinburgh's New Town had considerable prestige as a high status area. The changes in social status and the internal socio-space were less pronounced. Structural change, however, was not completely absent. Two EDs from the New Town are presented, Cumberland Street and Royal Circus. Of the two, the former, through infilling and division of larger properties into multiple occupancy units,[199] experienced the most change to its built form; and it is data for Cumberland Street which reveal higher turnover rates and greater socio-spatial change. A link between the form physical changes took and a growth in polarisation seems apparent, turnover trends and the individual examples of action by agents below seem to confirm this.

Figure 6.2: The net effects of population turnover on social status groups in Cumberland Street 1851-1891:



Source: Valuation Rolls 1855/6 to 1894/5 and Census 1851 -1891.

Evidence from the valuation rolls in Cumberland Street point to a movement out of the area by a number of lower-non manual households. Their considerable properties were often subdivided for two or more skilled working class families, thus lowering the

199 The valuation rolls data corroborate this statement.

status of the area. Given that no evidence exists in this ED for inter-generational changes in occupations, artisans must have come into the area. This resulted in a change in its social characteristics. Some instances are given below of agents acting in a way that indicates the interaction between their growing class consciousness and the operations of the housing market.

At 23 Cumberland Street in 1859 lived John McDonald, an accountant. In 1866 he moved to a grand town house in Randolph Crescent. This move may suggest he was successful in his job, and had the financial ability to move to a larger house, or might simply be a reflection of his growing sense of being 'out of place' with the clerks, grocers and craftsmen who were his neighbours. Ten years earlier, his occupational peers such as teachers, doctors and lawyers shared his street. This had changed as they, like John McDonald, had moved away. Robert Ogilvie, a lawyer, moved from 14 Cumberland Street in 1861 to Charlotte Square, the grandest of all the New Town squares and Peter McDoe, a French teacher, moved from nearby 20 Cumberland Street to Ainslie Place. Robert Ogilvie's Cumberland Street apartment was divided into two and shared between John Dewar, a draper and Alexander McRobert, a printer. This pattern was typical throughout the 1860s and must have changed the feel of Cumberland Street.[200]

Population turnover in this area resulted in the skilled manual group in Cumberland Street increasing their proportion by half over the period, while unskilled manual group remained unchanged proportionately, although in absolute terms there are significant numbers moving in as a result of subdivisions of older, large properties, especially in St Vincent Street. The migratory trend that is evident from the data on Cumberland Street over the period 1850 to 1895 is one of an exodus of the higher social status groups, and a movement in of artisans and skilled labourers. From whence did they come? Use again can be made of individuals who have been traced through

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[200]Source: Post Office directories of Edinburgh.

entries in the Post Office directories. Few unskilled workers are listed, but some skilled craftsmen are recorded.

William McAra, a tailor, moved from Rose Street to 47 Cumberland Street in 1859. He was joined by the brassfounder William Smith who came from Blair Street in the Old Town and John Dickson, who moved in 1875 from Canongate. He was another tailor. Other incomers included John Strobo, an upholsterer, in 1859 and a saddler, William Fowler, who took a newly divided property at number 73 in 1873. Both of these moved from the Old Town. This indicates two things about the structure and agency activity that was occurring in Edinburgh during this period. First, that skilled artisans were looking for a 'suitable' location in which to live and be seen to live, indicating their perceived place in society. The Old Town was no longer regarded by them as appropriate or adequate, as it came to be associated with the unskilled and Irish (Boyd and Oliver 1861; see also RRC). Consequently new locations were sought and found by those who could afford them. The Upper New Town area was one such place. It still had links with its grander past and was close to the New Town 'proper'. The aspiring workers probably wanted to distinguish themselves socially from the unskilled workers and expressed this socio-spatially through moving residence. Second, the mobility process must be associated with the growing distinction in society brought about by the capitalist and class structures. Through these structures agents placed themselves, or perceived themselves, usually in terms of as not being from another social status group. Artisans were not unskilled labourers and wanted the rest of Edinburgh to know this - thus they made residential decisions, aided by urban gatekeepers, to move.[201] In this way, intra-urban mobility became widespread and associated with the drive for betterment. This point is reinforced by the high levels of movement to the Cumberland Street by the socially aspiring working classes.

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201 Urban gatekeepers may have contributed to the skilled manual social group's 'feeling' and desire to move by building desirable and modern tenements. Such an example exists in Fountainbridge (Chalmers' Buildings as well as the Colonies development.

Mortality rates in the Cumberland Street area were lower than in Fountainbridge (Littlejohn, 1866), but this is almost certainly due to the higher social status of the latter. The census also shows that the age profile of heads of household in Cumberland Street was older than in Fountainbridge. From the valuation rolls there is little evidence to suggest that the death of a husband head of household, meant his relict and family moved away from the area. Only when a dwelling was in single occupancy did death have a clear impact on population turnover. In 1871 fewer than 10% of households in Fountainbridge had a single occupant. The crude death rate in the Cumberland Street area (that is Upper New Town) in 1863 was 13.57‰ and remained at roughly this level until the late 1880s.[202] If anything, the figures again exaggerate the true extent of adult mortality because of the number of children dying young even in high status areas.

Table 6.4 Age structure of household heads (%), Cumberland Street ED, 1851-1891:

Year	0-20	21-30	31-40	41-50	51-60	61-70	70+
1851	0	16.7	18.3	21.7	20.0	16.7	6.7
1871	0	14.4	24.0	26.0	17.3	12.5	5.8
1891	0	11.2	27.1	28.9	16.7	12.2	3.9

Source: Census enumerators' reports, 1851, 1871, 1891.

The slight fall in the age structure of Cumberland Street could be indicative of an area declining in status. The difficulty arising from this statement lies in the fact there is no evidence to judge whether the impact of mortality on turnover increased as a result of the lowering of social status of the area. This is a significant limitation.

Structural change and agency action in nearby Royal Circus was seemingly minimal if the lack of any change either to the built form or the social composition of the area is to be a judge of such things. Some limited change to the area did occur between 1850 and 1900. Properties which had been schools reverted to domestic homes, and a few of the larger houses were divided by 1891. The less 'grand' part of the ED, East Circus

202 13.57‰ represents the crude death rate in the Upper New Town of those over five years of age (Littlejohn, 1866).

Place, also saw some divisions of property. This resulted in a rise in the number of the skilled manual workers in these specific locations.

Figure 6.3 below confirms the fact that there was an out-migration of unskilled and semi-skilled workers, however they were never here in large numbers to begin with so the graph is slightly misleading. The lower class exodus from the area must be seen in the light of the rising rents and rateable values in the 1880s, and the consequent out-pricing of a relatively low paid social group.[203] Such action might have been the deliberate policy of urban gatekeepers to prevent a deterioration of the status of the area or simply a reflection of demand. Thus, class and class awareness was used to influence agency decision making[204]

Table 6.5 shows a stable age profile in line with the other limited structural changes to the area. The relatively high average age of head of household is characteristic of a high status area.

Table 6.5: Age structure of household heads, Royal Circus ED, 1851-1891:

Year	0-20	21-30	31-40	41-50	51-60	61-70	70+
1851	0	7.5	10.4	23.9	19.4	23.9	14.9
1871	0	8.1	12.0	27.0	17.2	21.2	14.5
1891	0	7.0	12.7	19.9	22.4	22.5	15.5

Source: Census enumerators' reports, 1851, 1871, 1891.

In Royal Circus, turnover rates were lower than in Cumberland Street (and Fountainbridge) as can be seen from of the lower levels of fluctuation around the horizontal axis in figure 6.3. This corresponds to lower levels of structure / agency interaction within the area and the smaller (relative) affect on social change.

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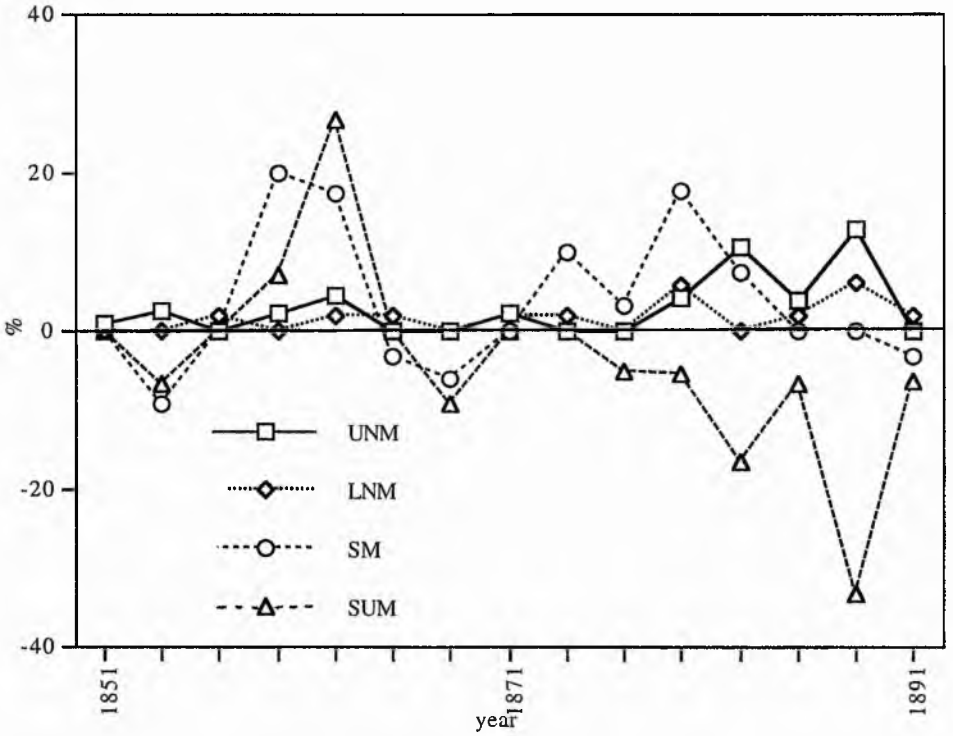
203 The valuation rolls show 10-15% increases in the rateable values of properties in this ED between 1881 and 1891, despite the fact that some properties were being subdivided.

204 The unexpected rise in unskilled workers during the late 1850s was the result of a new tenement block in a service street behind Royal Circus, built mainly for servants and tradesmen.

Figure 6.3: Net effects of population turnover on social status groups in Royal Circus 1851-1891: [205]



Source: Valuation Rolls 1855/6 to 1894/5 and Census 1851 -1891.

Indeed, in Royal Circus there was little change in the proportion of lower non-manual and skilled manual social groups.[206] The implication is that, as a member of this group left the ED, another, from the same social group, was taking his or her place. This is confirmed from the Post Office directories. For example, Dr Archibald Dickson left his house at 11 Royal Circus in 1886 and Alexander Reid, a lawyer took his place. At number 15, Robert Landale a surgeon was replaced by Innes Brodie, an advocate, in 1892 and James Burness, a lawyer, was first succeeded at number 32 by a fellow

[205] In addition to Cumberland Street and Royal Circus, other EDs have been examined to check whether or not those used in the study were anomalous or unrepresentative of the area. The additional EDs cover Saxe-Coburg Place, Rose Street, St James Square, and Claremont Crescent. As with Fountainbridge, a useful way to examine the effect of migration on social status composition is to consider the effects of population turnover on the social status groups, considering the net effects each year that the in-coming and out-going of the population caused.

[206] The proportion of the lower non-manual social group fell from 38.4% to 33.9% over the period 1851 to 1891. The skilled manual group varied from 17.6% in 1851 to 20.3% in 1891. In Cumberland Street lower non-manual households fell from 27.4% to 17.8% and skilled manual households rose from 34.8% to 51.2% over the same period.

lawyer, Mr George Ormond, before Kenneth Gourlay became the occupier in 1893 - the latter was an accountant. The New Town was perceived as a high status area and the turnover trends suggest it remained so: here agents could place themselves at the pinnacle of the social hierarchy.

The highest social group in Royal Circus increased proportionately by over twenty percent between 1851 and 1891,[207] and there was a corresponding decline in the lowest social group. However, this does not mean the one was replaced by the other. If anything, it points to the fact that the incoming upper non-manual group was taking over some of the properties of the lower non-manual group who, perhaps, could no longer keep up with the rent increases. John Williams, an advocate, took over number 8 from James Johnston, a commercial agent, James Mackenzie moved to Royal Circus in 1874 into the house vacated by George Leach, a stationer, who moved to Clerk Street in Newington - an area becoming popular with labour aristocrats and the petits bourgeoisie.

In sum, Cumberland Street had higher population turnover than Royal Circus and greater change in social composition. The upper non-manual group halved over the period and the lower non-manual group was reduced by a third as a result of out-migration. There is no evidence here of social mobility or inter-generational changes in occupation or residences. Evidence from the Post Office directories indicates that non-manual households were moving to the New Town or the growing suburbs to the south.[208]

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207 32% of householders in Royal Circus were from the upper non-manual social group in 1851; by 1891 there had been a 24% percent increase to 39.9%. The unskilled manual group fell from a representation of 12% in 1851 to 5.9% in 1891.

208 Thirty-four individuals were traced from Cumberland Street between 1860 and 1890. Some examples include: Joseph Graham, a lawyer of 20 Cumberland Street in 1870, who, by 1880, had moved to Merchiston; similarly William Shiells, a law agent, had moved to Balfour Street, and Thomas Anderson to Wemyss Place. James Fyfe had moved the relatively short distance from 7 St Vincent Street to near-by India Street. He was a solicitor and moved to a larger house, with a higher rateable value. The above examples are generally from the legal profession, but other occupations also migrated. Dr David Greig moved to Coates Gardens, Dr Angus MacDonald moved his practice to Charlotte Square, while John Dempster, a commercial traveller, moved to the Dean. Of those who shifted to the south, James Thompson, a teacher, and William Mills, a clerk, are two examples. Although these are only a few names from the valuation rolls, the definite trend emerging is either a short distant move to a grander street with neighbours of similar occupations - this explains the number of doctors and lawyers remaining in the New Town - or a move slightly further away, generally south or westwards.

- The suburbs

Suburbanisation was the inevitable result of ever increasing demands on city centre space. Those who had the ability would shift outwards to the more salubrious surrounds of a semi-rural idyll, yet remain within commuting distance of the city centre. This was aided by the construction of the suburban railway, which was completed by 1884 (Hunter, 1992). Extensive suburban development had occurred prior to this. The Grange was developed from 1855 onwards, Merchiston and Morningside from the early 1860s (Elliott and McCrone, 1980). The housing built was suited to the professional classes, although some of the inner suburbs were built for the routine lower non-manual workers (Rodger, 1979). These areas, in a relatively short space of time, changed from being largely agricultural in nature to sub-urban. The remaining pockets of agricultural labourers and gardeners had been engulfed by the mass ranks of civil servants, schoolmasters and retired army officers who made this part of Edinburgh their own territory - even to the extent that membership to the Grange cricket club was vetted for professionals (Gilbert, 1901). Thus, this area went through structural change to its built and social morphology. Migration to such areas was high owing to this change and the new housing developments. However, given the nature of the area, that is, one dominated by the upper echelons of society prone to sessility, once settled they were reluctant to move on and thus, socio-spatial polarisation was ensured.

The graphs below reveal higher net gains than net losses for the higher two social status groups. The graphs also confirm that turnover rates were generally lower compared to other areas. This was especially true in Morningside and, despite considerable in-migration, few residents were moving out. The high number of professionals, making perhaps their last move in what might have been a stepwise migration throughout the city, accounts for this. Grange, on average, reveals higher turnover rates than Morningside, with aberrations in some years which cannot be

adequately explained. The high levels in 1855/6 to 1856/7 and 1856/7 to 1857/8 are explained almost exclusively by the mobility of the skilled and unskilled social status group, especially the latter's rapid exodus between 1851 and 1855.[209] These groups would have felt increasingly out of place in an area renowned, even today, as being particularly class conscious.

The Grange had noticeably higher levels of population turnover in early years, when its social status and age composition were more in line with Cumberland Street and Fountainbridge. In 1851, the median age of heads of households in the Grange was 49 years, in Cumberland Street it was 48.5 years and Fountainbridge 43.5 years. However, by 1891 there was a considerable difference between the Grange and the others as the former became populated with higher status groups. This is shown in Figure 5.5 below. Median age had risen to 53.5 years and turnover rates had fallen. Grange had more in common with Royal Circus in terms of both social status and turnover. Morningside, an inner suburb, was similar to the Grange in social status throughout the period. In 1851, both were rural in character and later became part of the sprawling southern suburbs. Morningside had some of the lowest turnover rates in Edinburgh: in 1891 the median age of heads of households was 56 years, one of the highest in Edinburgh.

Table 6.6 Age structure of household heads (%), Morningside ED, 1851-1891:

Year	0-20	21-30	31-40	41-50	51-60	61-70	70+
1851	0	6.1	26.5	22.4	20.4	10.2	14.3
1871	0	7.1	16.1	19.6	28.6	14.3	14.3
1891	0	9.3	11.9	16.9	26.3	18.6	16.9

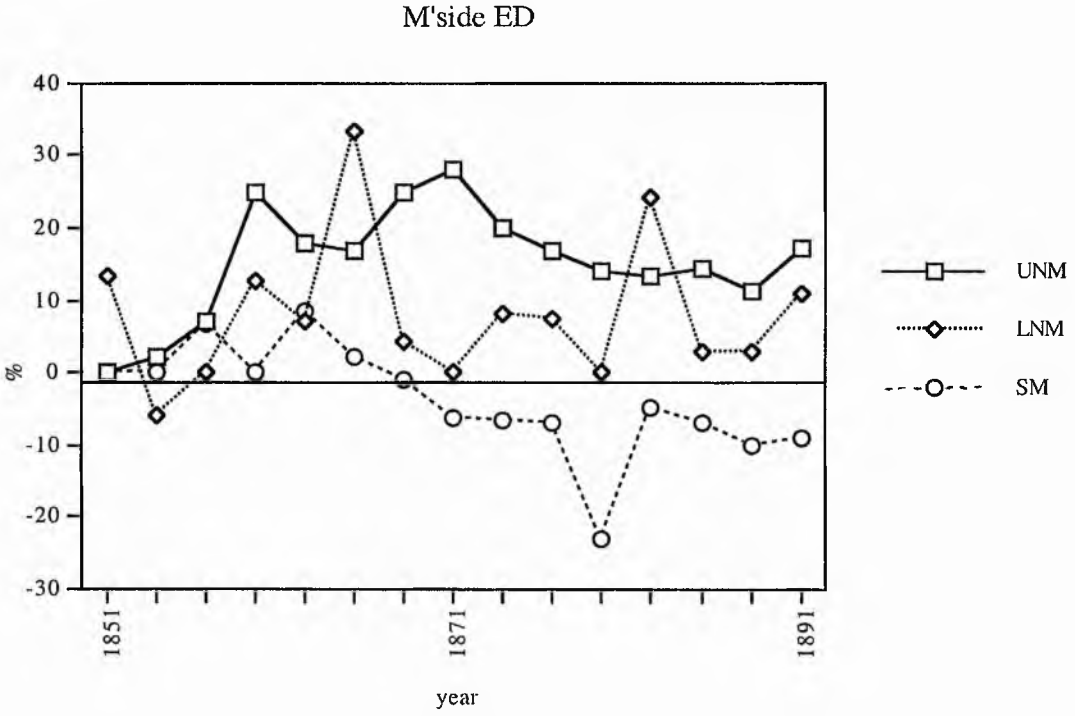
Source: Census enumerators' reports, 1851, 1871, 1891.

Moreover, the non-manual households in Morningside comprised 80% of the total which suggests an association existed in Edinburgh between the high status of an area, high median age of heads of household and lower levels of population turnover. The change in socio-spatial structure of the Grange and Morningside was the most dramatic

[209] The dramatic fall to a 7.9% turnover could be due to short-term fluctuations in mobility which is to be expected.

of all the EDs considered: the change was a shift from low to high status and one with an increasing age profile. [210]

Figure 6.4: The net effects of population turnover on social status groups in Morningside ED 1851-1891:



Source: Valuation Rolls 1855/6 to 1894/5 and Census 1851 -1891.

Figures 6.4 and 6.5 are for the two selected areas within the southern suburbs: Morningside and the Grange. Both are fairly similar in the type of housing and landscaping, although the Grange had none of the superior tenement building characteristic of the streets in Morningside, instead the houses were large detached villas. The largest group in Morningside, the lower non-manual group, increased modestly from a representation of 35.5% in 1851 to 43.3% by 1891. Thus, the link is maintained between low turnover and less change to socio-space. Nevertheless, the largest in-coming group, the upper non-manual, quadrupled, but this was probably due to houses 'ready made' for them by urban gatekeepers keen to keep the area's high status (see chapter five).

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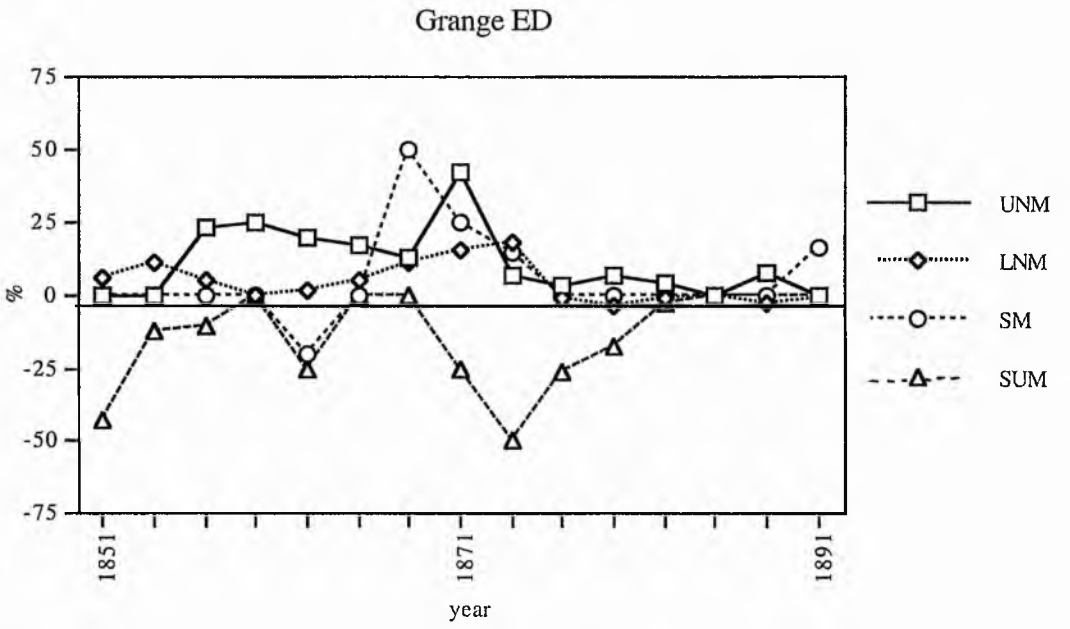
[210] The median age of heads of household in Morningside in 1851 was 46 years. In 1871 it reached 49 years and by 1891 was 56 years. In the Grange the corresponding averages were: in 1851, 46 years; 1871, 49 years; and 1891, 53.5 years.

Figure 6.5: The net effects of population turnover on social status groups in the Grange 1851 - 1891.



Source: Valuation Rolls 1855/6 to 1894/5 and Census 1851 -1891.

In the same period the Grange experienced an overwhelming change to its social composition. The unskilled group fell from a dominant 42.6% of all householders in 1851 to a mere two percent by 1891. Added to this was an eight-fold increase in representation of the upper non-manual group, a near doubling of the lower non-manual group and a halving of the skilled group. These compositional changes are indicative of high levels of turnover. The graph for Grange demonstrates this, giving credence to the view, confirmed elsewhere, that there was an association between high net turnover and social status change. Turnover of both non-manual groups consistently had positive effects on social composition, although by the mid 1870s turnover was not affecting social composition at all. This indicates that those leaving the area were being replaced by individuals from the same social group indicative of a high status area, as only the wealthiest in society would be able to afford the large

villas in the area.[211] The consequence of this, as seen in the graph above, is limited change to socio-space. The Grange had been through its transition when the lower social groups left. Once it became a high status area it did not change again and its feudal superiors perpetuated its exalted position by price discrimination and feu control (see chapter five and Elliott and McCrone, 1980).

Mortality rates in Morningside and the Grange were low (Littlejohn, 1866). The higher status of the areas combined with the healthy semi-rural atmosphere helped contribute to this. The higher age profiles and lower turnover also suggest a higher life expectancy. Very few of the large properties were in single occupancy, and some had widows as head of household, indicating that, when a husband died, the family did not always move out.[212] In 1863 mortality rates in Morningside still reflected the largely working class agricultural nature of the area, for those above five years of age the crude death rate was 21.44‰,[213] while in the sparsely populated Grange the equivalent rate was a mere 8.86‰. The effects of mortality on population turnover, though, are thought to be minimal because of the small sample size. The significant fall in the crude death rate in Morningside may be attributable to an out-migration of working class residents and an in-migration of non-manual households, the latter generally having a higher life expectancy.

The median age of migrants has been calculated to give some idea of the changing age profile of the EDs. This will give a fair indication of the age range of heads of households moving to the areas. The data show an average age higher then in other parts of the city by 1891, which is precisely what is expected given the social status profile of those who were moving suburb-ward. Also noteworthy is that, in all cases, those leaving the areas were younger than those arriving, indicative perhaps of the higher mobility of the young, but this may also point to the fact that the predominant

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211 The price of the villas was often set by the feudal superior deliberately excluding poorer residents from the area and thus ensuring high status residents (see chapter five and the discussion of Sir George Warrender, also Elliott and McCrone, 1980).

212 By 1891 in some streets in the Grange and Morningside widows made up to a third of all heads of households. They were generally listed in the census as annuitants.

213 Although this could be a result of the increasingly very high age profile of the area.

groups who were leaving these areas were lower social status groups. The result of this trend is an ageing population in the ED. This is suggested in the table below.

Table 6.7 Age structure of household heads (%), the Grange ED, 1851-1891:

Year	0-20	21-30	31-40	41-50	51-60	61-70	70+
1851	0	8.8	21.1	28.1	22.8	8.8	8.8
1871	0	4.7	17.6	29.4	17.6	16.5	14.1
1891	1.3	3.8	12.8	24.4	23.1	20.5	11.5

Source: Census enumerators' reports, 1851, 1871, 1891.

From table 6.7 it can be noted that, in 1851, the median age of migrants moving into Morningside was 46 years and of out migrants 40 years - the median age of all householders was 46 years. Thus, outward migrants were generally younger than heads of household for the district and inward migrants. The consequence in Morningside of this is an ageing population, especially since the trend continues to 1891. In the Grange the trend was more dramatic. The outward migrants were much younger than those coming in, and younger than the median age of all heads of household. This points to a swifter ageing of the population, especially notable in the Grange between 1851 and 1871 when age differentials between all migrants were greatest. Both the suburban EDs have an ageing population, and this was due to the type of mobility being experienced, rather than the actual levels.

Many higher status agents, usually over forty years old, moved to Morningside and the Grange. Both of these areas were perceived to be prestigious and symbolised success and position. They also represent the pinnacle of residential achievement and may explain the link between high age profile and low mobility - there was simply no where more elevated to move on to. Thus, the suburbs appealed to a the higher classes in society. The PO directories are useful in helping to identify some moves that were made into these area which illustrate this.

James Morriston, a dentist, who lived in an ED neighbouring Cumberland Street was one of the first residents to move into the new Grange development in the late 1850s.

He was still resident there in 1879 after which no trace exists of him. The Grange became popular for medical men in particular. Dr William Husband moved from 28 Clarence Street (again in an area similar to Cumberland Street) to Grange Road, whilst Dr Robert Lundie moved the relatively short distance from Warrender Park Road to 55a Grange Road in 1862. The roads were similar in status, spacious with grand tenements in the former and large villa property in the latter. However, a glance at Warrender Park Road in the PO directory reveals men of commerce rather than of the professions. It housed accountants, bankers and commercial travellers. Perhaps Dr Lundie felt out of place with such men. This indicates a key feature of Edinburgh society highlighted in a book written at the time of Lundie's move. John Heiton published a book in 1861 entitled 'The Castes of Edinburgh' where he argues that the capital had more castes than all of Hindustan! Moreover, he maintains that the gradation of classes within the non-manual employees was such that doctors were considered above dentists and apothecaries and Writers to the Signet were graded higher than advocates who were higher status than mere solicitors. It is quite likely that professionals would therefore want to distinguish themselves above as commercial men, and this they could do in their choice of residence. Thus, Grange Road probably contained more medics per head of population than anywhere else in Scotland: not all of them men. In nearby Bruntsfield Lodge (same ED) Dr Agnes McLaren, one of the first women to graduate in medicine from Edinburgh University, had moved from a small building in York Place to a considerable property in the suburbs.

The key migratory trend to emerge is that professionals were moving from areas like Cumberland Street to Grange and Morningside. This applied to teachers as well as doctors. Teachers were found in large numbers in Bruntsfield Place. Arthur Anderson had moved there from Cambridge Street, representing a similar move to the doctors. It is curious that many lawyers remained in the New Town in places such as Royal Circus, instead of moving to suburbs. Lawyers, of course, often combined their large town houses with their offices. They would also want to be in easy reach for clients, many of whom would have found a trip to the suburbs difficult and inconvenient.

- The Old Town

The suburbs were a different world to that of the Old Town of Edinburgh. Ramsay Close in the Canongate was part of an area described by Littlejohn (1866, p.33) as 'squalid and housing some of the worst excesses of deprivation'. Ramsay Close had one of the highest population densities anywhere in Edinburgh, probably Britain (see chapter four). Coupled with this were poor sanitation and high mortality rates.[214] It was also in proximity to the city gas works - a notorious polluter (Littlejohn, 1866, pp. 13-14). It was a dark and dreary tenemented hovel, opposite several breweries and only accessibly through the narrowest of alleyways. Yet here, in an area of less than a quarter of an acre, lived some two to three hundred people. Because of the poor housing, very few flats had a rateable value above three pounds a year, which means many are not recorded in the early valuation rolls, and therefore meaningful migratory analysis is impossible. Furthermore, few, if any, residents are listed in the directories. Nevertheless, after 1871, more information is available, and, although not a complete survey, provides some useful statistics. Many tenements in the area were derelict from one year to the next. Indeed in 1855 only two tenement blocks were inhabited in Ramsay Close, out of a dozen built.[215]

This ED did not alter significantly during the period in terms of its built form other than a continued deterioration of the buildings, but the area surrounding it (Canongate) went through significant changes. New breweries and many, often noxious, factories were built, either along the Canongate or the roads immediately behind. Littlejohn comments on the amount of pollution they produced. The effect of this was a change to the economic enterprise of the area - in general terms a shift away from the family run forges and cooperages to capitalist factory-based large scale industrial concerns. Thus,

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214 The death rate (for over five years of age) recorded in Canongate by Littlejohn (1866, p.13) was 31.23 per thousand.

215 Along with Ramsay Close itself, the ED includes other closes leading warren-like into the former, as well as a tenement block on the Canongate.

the expectation is that the levels of mobility to and from the area would have been high, and exacerbated by the fact that few non-manual households were resident in the area. Table 6.8 also suggests a young age profile, again confirming the association between lower social status and younger age profiles of heads of households. [216]

The low social status, poverty and squalor of Ramsay Close meant mortality rates here were amongst the worst in Edinburgh.[217] The effect this had on population turnover, though, is unclear in an area with high levels of migration generally. Notwithstanding, the poverty of Ramsay Close meant that when the breadwinner died, and it was usually a male, the relict and the family were often rehoused or put in the workhouse (which incidentally was along Canongate). Empty properties were available on a frequent basis, but then, because of the lack of a regular income, the unskilled worker was the most frequent of all migrants, often moving more than once in a year. This means that, even if detailed yearly statistics were available for houses over less than £3 a year rates, they would prove insufficient to calculate the true extent of migration.

Table 6.8 Age structure of household heads (%), Ramsay Close ED

Year	0-20	21-30	31-40	41-50	51-60	61-70	70+
1851	0	17.6	23.0	23.0	23.0	5.4	6.8
1871	0	19.8	29.0	24.6	18.8	7.2	1.4
1891	0	20.0	36.9	15.4	12.3	9.2	6.2

Source: Census enumerators' reports, 1851, 1871, 1891.

Table 6.8 shows the high proportion of heads of household under forty years in Ramsay Close. This remains consistent over the time period. Despite this, mortality is high and turnover rates are amongst the highest in Edinburgh.

Table 6.1 showed that Ramsay Close had a high turnover of population, in some instances over a third of all household moved in a year: 28 out of the 97 households

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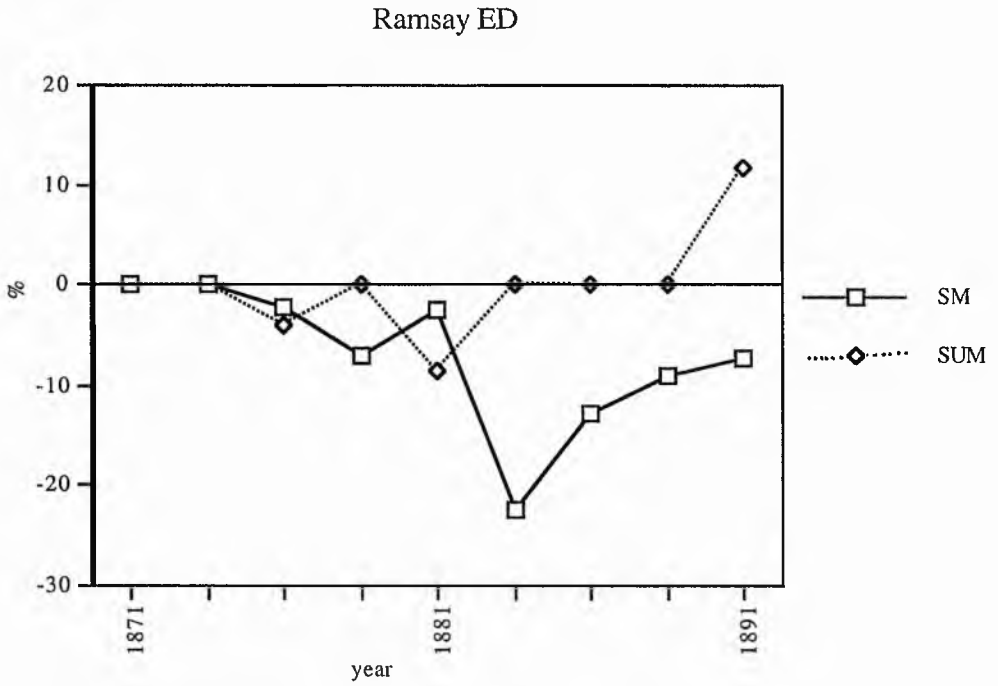
216 In 1851, unskilled heads of households made up 44.3% of this ED: this had increased to 60% in 1891.

217 Littlejohn records that, in 1863 the Ramsay Close area's most common cause of death was chest infection and phthisis. A single person died of a chest infection in the same year in the Grange. This suggests high pollution and higher levels of disease in the poorer area.

moved between 1871 and 1872; 35 out of 96 the following year. This seems extraordinarily high. Unfortunately no residents are listed in the directories, and only two families have been traced.[218] The high turnover rates here do not affect socio-spatial change as much as in Cumberland Street and Fountainbridge. This is attributable to the fact that Ramsay Close was dominated by the manual social groups almost to the exclusion of the non-manual groups. Socio-spatial polarisation of Ramsay Close remained high throughout the period. Given the ED's position in an area that would have been unacceptable as a place of residence for the higher social groups, and added to the fact there was little structural change facilitating such a move (as elsewhere), then Ramsay Close's high turnover rate was due entirely to lower status group movement, which is known to be high.

Figure 6.6: The net effects of population turnover on social groups in Ramsay Close, 1871 - 1891:



Source: Valuation Rolls 1855/6 to 1894/5 and Census 1851 -1891.

218 Both were headed by unskilled labourers, and moved no more than a hundred yards to a neighbouring tenement. There are other instances of this occurring in Old Town EDs. Reasons for such short distance move include uninhabitablity of the flat, and being shifted by the landlord to a neighbouring flat he owns in the block. Further reasons could include the need for cheaper accommodation. This theory is given credence when one considers the high level of seasonal employment in the area and the consequent, and often chronic, periods of unemployment. The area of Canongate also includes the workhouse - it is possible that residents of Ramsay Close unable to support themselves , especially the older ones, moved into this.

Figure 6.6 shows that the net effects of turnover were fairly muted until after 1881 when the ED was increasingly downgraded and many residents would have moved away or been rehoused by landlords. This was due to the Town Improvement Act of 1881 which declared many of Edinburgh's closes unfit for human habitation[219]. This represents another outcome of structure / agency interaction, in this case downgrading an area further - few agents, such as landlords, had the inclination to do anything about Ramsay Close, and those who lived there had not the money.

- The Colonies

The Colonies are a group of model dwellings built by the Edinburgh Co-operative society in the Stockbridge area. They were built in time for the 1871 census, and data are available thereafter for migratory analysis. These houses were designed for and attracted skilled or 'deserving' artisans and routine clerical employees - this is evident from the occupations noted in the 1871 census. Turnover in this area was high, and consistently so - never falling below fifteen percent each year. There was also considerable change to the social status of the area. Where lower non-manual residents were content to share adjacent accommodation with social inferiors at first, the former dwindled in numbers by 1891. This was coincident with a rise in the ED of unskilled workers. Indeed this group increased its representation by fifty percent in twenty years.

Table 6.9 Age structure of household heads (%), the Colonies ED

Year / Age	0-20	21-30	31-40	41-50	51-60	61-70	70+
1871	0	15.0	35.4	19.7	19.7	7.9	2.4
1891	0	11.4	25.2	26.0	19.5	8.9	7.6

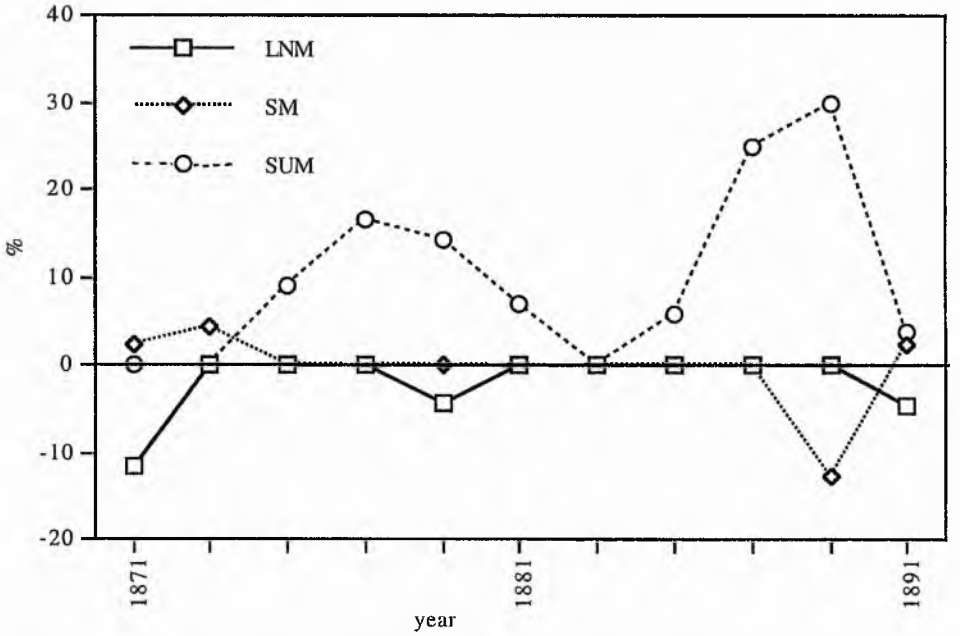
Source: Census enumerators' reports, 1851, 1871, 1891.

It is difficult to find specific reasons for this behaviour. One clue might lie in the age profile of the area. Table 6.9 shows the change to the age profile and the age of

[219] This is an example of how political factors drove some of the socio-spatial change within Edinburgh (see chapter four).

migrants. It is clear from the fall in the number of heads of household under forty years old - that younger, perhaps junior professionals, as well as recently apprenticed artisans, started family life here, possibly moving on later to something grander reflecting changing aspirations or perceived place in a structured society. Structure / agency interaction of this sort led to a growth in available accommodation. Because of the low rents this was suitable for skilled and limited numbers of unskilled workers.[220] The Colonies young age-profile was largely the result of the co-operative company seeking younger men with families in good trades: preference was given to this group and finance was readily available (Pipes, 1998).

Figure 6.7: The net effects of population turnover on social status groups in the Colonies: 1871-1891:



Source: Valuation Rolls 1855/6 to 1894/5 and Census 1851 -1891.

Table 6.1 shows high turnover rates in Colonies but there was limited social status change. This once again suggests that the form of migration is important in terms of socio-spatial change. Of note is a burst of activity in the late 1880s which saw a direct

220 The Colonies are considered in greater detail in chapter five during the discussion of the Edinburgh housing market and its influence on socio-space.

replacement of skilled workers with unskilled. This is probably indicative of what happens when a higher social group leaves an area because of heightened agency perception of their place and position in society. Agents were prompted to act by the growth in consumerism (the Colonies were differently designed from other artisan dwellings), the influence of urban gatekeepers and the observations made of 'Others'. Thus, the area increasingly comes to be seen as deteriorating in social prestige, later prompting some skilled workers - who try to emulate their social betters - to find a more prestigious area in which to live. Meanwhile their place, far from being taken by fellow skilled workers who sensed the change in status, is taken by lower social groups.[221] This was apparent in the 1890s in the Colonies.[222] In terms of socio-space, Colonies, from being a highly mixed lower non-manual / skilled manual 'model' area in the 1860s, became less so by 1891. Figure 6.7 points to an out-migration of the non-manual householders which, by 1891, had increased the polarisation of the manual groups. This trend continued in the 1890s with a growth in the influx of unskilled households. By then there was a relaxation in who could rent or buy a house; no longer, it seems, was property restricted to 'those deserving' (Pipes, 1998 cites Edinburgh Co-operative Company, minutes 1891; see also Begg, 1866).

The policy by Begg and his colleagues in the co-operative was a deliberate attempt at socio-spatial engineering. Through control of rent and selection procedures, certain skilled employees, who fulfilled the requirements of thriftiness and sobriety, were given priority to accommodation. This meant that mobility to the Colonies was, at first, influenced by the urban gatekeeper. This action impacted upon the meso-scale socio-spatial map of Edinburgh as skilled workers from other parts of the city moved to a

221 The skilled workers were generally well catered for in terms of housing accommodation in Edinburgh, so had many alternatives to the Colonies. This was increasingly so from the 1870s with extensive developments in the Carlton Hill area and Gorgie /Dalry (Elliott and McCrone, 1980).

222 The few examples from the directories, in an area where few residents were listed, point to a movement of skilled and lower non-manual workers away from Colonies to areas with slightly higher rateable values, but a considerable advance in terms of social prestige. Indeed, George Mill, a legal clerk of 2 Collins Place, moved to Bruntsfield, a sizeable jump: the latter has a rateable value over double that of the former. Thomas Peddie, an architect, moved from 27 Collins Place to 10 Balmoral Place and added over five pounds a year to the rateable value of his home. James Low, a mason, moved from Hugh Millar Place to Thistle Street in the New Town, and finally, James Mckie moved from 5 Hugh Millar place in 1874 to Newington to run his grocer's shop. The rateable value in his new property was £25 per year compared to the £16 previously. The increases in rateable value in all these cases point to larger properties and so represent upward moves.

specific location in considerable numbers. The trend, however, did not continue. Over time the weakening of restrictions on the social class of those moving to the area saw an influx of unskilled workers, which drove many others away to other areas now competing for skilled workers. The history of the Colonies during the period 1871 to 1891 therefore is one closely associated with the structuration process. Initial control of the housing market led the co-operative to play upon class and values to act as a magnet to pull skilled workers to the Colonies. Gradually, with the waning of the co-operative and the rents becoming affordable to unskilled workers, the Colonies socio-space changed and the area was no longer associated with the labour aristocracy.

Details exist from sources other than the census and valuation rolls regarding the occupants and migrants from the Colonies. Detailed ledgers were kept by the Edinburgh Co-operative Society recording all changes to tenancy. The change which is of most significance is from the first occupants of the newly built houses to those who replaced them. Increasingly, the skilled and 'deserving' craftsmen were replaced by unskilled workers. To take Collins Place as an instance, 75% of occupants were 'skilled' or clerical in 1871. In number one lived Arthur Colville, a printer. He moved out in 1879 and was replaced by Edward McKie, a plumber. Mr Mckie is recorded as still living there at the time of the 1891 census. At number five, Stuart Yarroll, a furrier, moved from his Colonies home to Gorgie in 1884 . He was replaced by Mr Jackson, a gardener. The occupational list of Collins Place in 1871 included masons, compositors, joiners, cabinetmakers, butlers and the occasional merchant. By 1891 there were carters, general labourers, dyers and warehousemen.

Those who initially moved to the Colonies, being tradesmen, were often listed in the directories. A picture soon emerges of many being from the Old Town or the areas adjacent to it. To use the first few houses in Bell Place, as an example, it can be noted that George Nicoll moved in 1871 to occupy number one. He was a shoemaker and had lived in Grassmarket. John Milne, his neighbour and a plumber, had moved from Holyrood Road. Skipping a few houses, at number six, John Purves was a joiner who

had moved from Lawnmarket, near the castle. Of the twenty or so residents of Bell Place that can be traced back to their previous residence, all but three are from the area broadly termed the Old Town.

The Edinburgh Co-operative Company were appealing to the 'decent' men of the Old Town to move to the new 'self-contained' houses in the Colonies. Their use of place to appeal to class identity and aspirations worked. The respectable classes were increasingly feeling that respectability meant living anywhere other than the Old Town, so they moved away from the latter in considerable number. Not all would have gone to the Colonies, but the general exodus of the skilled classes from the Old Town would have contributed to the downgrading of the latter area. By 1891, although far from being the slums they had been before the numerous improvements, the Old Town was largely empty of skilled artisans. Ironically, it was in the early part of the nineteenth century, when the slums were at their worst, that aristocrats were still to be found in the High Street. This could indicate that, at this period, the class consciousness which became so apparent from the mid-century onwards was yet to express itself in socio-spatial terms other than by the vertical segregation which kept Dowager Duchesses on the second floors.

Less clear is where those leaving the Colonies were going. It is often easier to trace residential moves from destination to origin, rather than the other way round, because the problem of death does not surface. A few residents have however been traced, but the extent to which they are representative is questionable. Mr C. T. Lloyd, a carpenter, of Collins Place moved in 1883 to a house along Leith Walk and the sculptor David Edwards moved from Reid Place to Tollcross. Little is known, or can be speculated, about the motives for these moves, although Leith Walk was an area where housing speculators were active and may have used a number of devices to entice new residents.

In the Colonies, the subtle changes to the social status composition and the outward migration of the non-manual social groups towards the suburbs, resulted in an area increasingly identified with manual workers and led to manual workers being increasingly polarisation from the non-manual groups. Of this group, it was the lower end which moved in rather than, say, the labour aristocracy which had previously favoured the area and were moving out by 1891. Here, another problem associated with employing only four social status categories arises, as the labour aristocracy cannot be distinguished within the skilled manual group. Perhaps they belong in a category to themselves. But such subtleties within social groups can at least be appreciated at the micro-level.

- *Migration and Life-cycle Stage*

The analysis of population turnover has been based upon heads of households. This is a group which, because of a certain degree of commitment to a property, were probably not the most mobile members of society. As such the true extent of population turnover is perhaps under-stated. Younger members of society, especially young unmarried men, would have been in a much better position to be mobile and frequently so. These men would have taken lodgings which allowed them considerable degrees of flexible in mobility. Furthermore, women are considerably overlooked. This is largely due to the fact that few would have been heads of household, but, nevertheless, like young unmarried men, the role of women in intra-urban migration is largely absent from this work, and much other work. This ought to be addressed in future research as the impact of female mobility on socio-space is largely unknown. Thus, heads of household, generally married men, have been used for analysis, but even these differ considerable according to the stage in their life-cycle.

Stepwise intra-urban migration may be related to life cycle stage. Such migration involves households beginning in a, usually, poorer area and working their way up to something grander - an example in Edinburgh might be a move from Fountainbridge to

the Grange. Thus, the more respectable an area is considered to be, the lower the turnover is likely to be, *ceteris paribus*, through the action of stepwise movement. Royal Circus, Morningside and the Grange all showed lower turnover rates than the other EDs later in the period and this might have been affected by stepwise movement. Unless a reasonable sample of individual's can be traced, this is difficult to prove, however.

The skilled manual group was never likely to live in Grange or Morningside due to financial constraints, but their ideal might culminate in living in the tenements of Cumberland Street, Northumberland Street, and the areas of Newington and St Leonards. A skilled worker may have set out on life's journey in Cowgate or West Port, and perhaps via Fountainbridge or Dalry arrived at Cumberland Street. The reasoning behind this arises from evidence from the census and valuation rolls. Cowgate (and West Port for that matter) had lower age profiles, Cumberland Street had a higher one, and the districts mentioned in between had successively higher age profiles.[223] This could point to a stepwise migration based upon life cycle stage. By the time the young apprenticed mason from West Port reached Cumberland Street he was a master mason nearing the end of his economically active life.

Table 6.10 below shows the median age of heads of household migrants from the selected EDs. It suggests stepwise migration might well have been taking place as areas of higher status have a higher median age of in-migrant than EDs with higher proportions of lower social groups. For instance, compare Morningside with Fountainbridge. Moreover, the figures reveal that the age at which a householder was most likely to move varied between EDs, although the 35-45 years range seems most

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223 The proportion of heads of households under forty years of age in Cowgate was 59.7% in 1851 according to the census enumerator's reports; in Cumberland Street the comparable figure was 35%; in Newington, 37.8%; in Royal Circus the figure was 17.9%. By 1871 Cowgate's proportion of under forty year olds was 53.5%; in Cumberland Street it had risen slightly to 38.7%. Other areas were as follows - Dalry, 51.4%; Royal Circus, 31% and Grange 17.5%. The 1891 figures reveal, in Cowgate, an under forty years householder percentage of 55.4%; in Cumberland Street, 28.1%; in Royal Circus 20.0% and in Grange, 18.4%. These figures throughout the period could consistently suggest a stepwise pattern from areas of low social status to areas of higher status. Two patterns emerge: Old Town to New Town 'service streets, for instance Cumberland Street (the skilled workers pattern) and from Cumberland Street to New Town or southern Sub-urbs (the non-manual household pattern). This is suggestive of certain trends apparent within Edinburgh over this period, even if the evidence is not conclusive.

mobile across the city. In the EDs with higher proportions of non-manual social status groups, there is a definite tendency for out-migrants from that area to be younger than in-migrants. This is indicative of the flight of the manual social status groups, leaving the area as housing costs increased and it became increasingly dominated by higher status groups. On average, skilled and unskilled manual households tend to be younger. The table also reveals that the EDs with a lower proportion of high status social groups had younger age profiles owing to the fact that the age of in-migrants is lower than those leaving. The converse is true in high status areas.

Table 6.10 The median age (years) of heads of household for in- and out-migrants of selected Edinburgh EDs 1871 - 1881. [224]

ED	1861		1871		1891	
	IN	OUT	IN	OUT	IN	OUT
FOUNTAINBRIDGE	35	34	36	35	38	35
ROYAL CIRCUS	48	44	51	46	51	45
CUMBERLAND	37	39	35	36	40	39
MORNINGSIDE	46	40	46	44	48	45
THE GRANGE	48	42	51	40	52	43
RAMSAY CL.	na	na	34	34	35	33
THE COLONIES	na	na	36	44	37	38

Sources: Census enumeration reports. na = no data.

In Edinburgh, what cannot be concluded is that in years of high turnover there was a correspondingly high level of change to the socio-space of the area. Socio-spatial change did occur as was shown in chapters four and five, but it was not the level of migration *per se* which affected change but the composition of migrants in terms of social-status and age. Thus, the form rather than the level of intra-urban migration was the important factor. Despite a clear link in some EDs between high turnover and high

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224 The median age has been calculated using the census and the valuation roll for the preceding / following year. For instance, for in-migrants, those recorded in 1861/2 but not in 1860/1, ages have been taken from the 1861 census. Similarly, those heads of household resident in the 1861 census but not in the 1862/3 valuation roll have had their age determined from the census. There were a few instances where age was not able to be determined. Valuation roll data exist from 1855 and so the 1861 census is the first that can be used. The absence of data for Ramsay Close in 1861 is due to its omission from the valuation rolls. This was because only five dwellings in the ED were valued at over three pounds a year.

levels of social status change, the association is not universal. For instance, Morningside consistently had turnover levels of under ten percent, yet its social spatial composition radically altered over the late nineteenth century: it did so because those who moved out were replaced by a higher status group. In contrast, the Colonies had a turnover rate of twenty percent on average each year, while change to the socio-space of the area was limited.

The turnover analysis in Edinburgh provides a useful insight into how micro-areas were changing and the effect this would have on the meso-scale socio-space. Clearly, some the residents of some EDs were more mobile than others. The action of agents means that the socio-spatial polarisation within Edinburgh can be better understood. The process of migration was an influential factor facilitating this change; yet the decision made by agents were likely themselves to be influenced by meso-scale factors and macro-scale structures. Thus, the duality of structuration can help explain the nature of the spatial changes within the capital. But can the same be said of a smaller, less structurally dynamic, settlement? By examining Perth, the population turnover outlined in EDs within Edinburgh can be put into some context, and the effects of agency decisions making in the smaller settlement can also be analysed.

6.4 MOBILITY, STRUCTURES AND AGENTS: PERTH

In the previous chapter it was noted that Perth, a town a tenth of the size of Edinburgh, underwent a considerable amount of socio-spatial change, although at a different pace to Edinburgh. Perth, being a smaller and less varied town, did not undergo rapid transformations: a factor which may explain its decline in the Scottish urban hierarchy. Nevertheless, smallness is no bar to socio-spatial change and high levels of structure / agency interaction. Perth did not experience the extremes of social change that Edinburgh did, and by the end of the century, no ED was devoid of the non-manual groups or unskilled workers - as was evident in some EDs in Edinburgh.

Functionally, and dimensionally, Perth was different from Edinburgh. The level of dynamism in its economy can in some respects be considered to be much less than Edinburgh, for instance in terms of the lack of suburban development and the absence of major industrial estates. Population growth also remained checked by Perth's failure to develop a manufacturing base, perhaps a consequence of its location. It is on the highland fringe and therefore outwith the dynamic growth zone of the Forth-Clyde isthmus. However, in terms of changes in the occupational base of the economy, Perth was as dynamic as Edinburgh - indeed in some sectors change was greater.[225]

Six out of the thirty or so EDs are examined below, representing six 'different', yet as representative as possible, areas of Perth (see chapters three and five). These areas follow the categorisation used in Edinburgh to represent contemporarily 'perceived areas' in the late nineteenth century and were chosen to facilitate comparisons between the towns. Thus, Perth had an Old Town in the centre, a 'New Town' of Georgian houses, an industrial district in a zone of transition around the railway station, as well as a 'suburban' ED, and an ED with extensive house building ongoing. The levels of migration and the effect on socio-space are outlined, and discussed in the light of evidence presented above for Edinburgh.

Table 6.11: Turnover rates (%) for six EDs in Perth for selected years.

YEAR / ED	Barossa Place (C)	Craigie (G)	Station (J)	Marshall Place (O)	High St. East (V)	Balhousie (BB)
1855/56/7	19.4%	17.6%	20.9%	20.2%	20.8%	
56/7 - 57/8	16.9	20.0	19.0	20.4	16.9	
57/8 - 58/9	16.6	17.4	21.9	18.1	18.6	
58/9 - 59/60	15.4	16.6	19.3	14.7	17.6	
59/60 -1861	14.9	16.8	18.0	12.4	17.2	
1871/2 - 72/3	19.6	13.4	15.2	8.6	19.5	
72/3 -73/4	12.6	12.1	15.9	11.3	21.2	
73/4 - 74/5	12.6	13.5	14.5	11.3	18.7	
74/5 - 75/6	14.2	14.6	15.3	9.1	17.3	
75/6 - 76/7	14.8	13.6	14.6	7.6	17.5	
91/2 - 92/3	12.9	11.8	17.8	12.9	16.1	10.7
92/3 - 93/4	13.9	10.6	15.9	7.1	16.8	8.3
93/4 - 94/5	13.9	11.9	15.3	11.0	19.3	5.8
94/5 - 95/6	10.8	9.4	14.8	8.7	17.1	7.4

Source: Valuation Rolls for Perth Burgh 1855-1856 to 1895/6.

[225] Perth saw its manufacturing base double over the forty years from 1851 to 1891 while Edinburgh's grew by a comparatively modest third. The railway brought considerable change to the urban morphology of Perth and aided migration (Graham-Campbell, 1994).

Table 6.11 provides a comparison of turnover levels in the six selected EDs. The highest levels of turnover were in Station and High Street East, the former being 'industrial' Perth, and the latter 'old' Perth. Station is comparable to Fountainbridge, the industrial area of Edinburgh, and High Street west is comparable to Ramsay Close ED of Edinburgh's Old Town.[226] These two Edinburgh EDs had the highest turnover levels of those areas considered in the capital. It was suggested, for Edinburgh, that these two 'types' of district witnessed the highest levels of structural change in their localities. From what is known in Perth, Station and High Street East, in the tenemented part of old Perth, are likely to have been similar in structural dynamism. Station experienced tremendous change - eight railway lines eventually converged on this ED by 1891 (Graham-Campbell, 1994).

The areas of lowest turnover are also similar to their counterparts in Edinburgh. Suburban Craigie and 'New Town' Marshall Place - broadly compare with Morningside and Royal Circus, although the comparison is at best a little strained.[227] Nevertheless, the importance of structural change as a major factor in promoting socio-spatial change in Edinburgh has already been seen and raises the question of whether or not the social morphology of the smaller burgh was also influenced by structural change, albeit on a smaller scale. An analysis of the six comparable EDs in Perth allows an examination of this question.

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226 The comparison between High Street East and Ramsay Close is somewhat contrived. Nowhere in Perth were conditions as bad as they were in Ramsay Close.

227 Few places would compare in grandeur to Royal Circus: Rose Terrace (a significant part of Marshall Place and later Dalhousie) was as close as Perth got. Similarly, where in Perth compared to Grange or Morningside? Even by 1891, the rustic suburbs of southern Perth, had more in common with 1850s Morningside, than with the southern suburbs of Edinburgh in the 1890s.

Table 6.12: Social status composition of selected EDs in Perth, 1851 - 1891:

ED	UNM			LNM			SM			SUM		
Year	1851	1871	1891	1851	1871	1891	1851	1871	1891	1851	1871	1891
Barossa	5.9%	4.5	4.9	26.3	42.4	43.9	36.5	31.0	22.6	31.3	22.0	28.6
Craigie	5.1	13.0	13.2	12.5	25.3	51.4	33.1	36.8	25.7	49.3	24.9	9.7
Station	2.3	0.7	0.3	14.2	21.9	11.7	52.0	41.5	40.1	31.5	35.9	47.8
Marshall	13.8	7.8	5.9	41.3	50.9	56.5	25.0	30.1	28.8	20.0	11.2	8.8
High St.	2.1	2.0	0.5	16.8	9.8	10.7	52.9	50.7	33.7	28.3	37.6	55.1
Balhousie			17.6			60.0			11.7			10.7

Source: Census Enumerators' Schedules, 1851, 1871, 1891.

- BAROSSA PLACE

Barossa Place in 1851 was a socially mixed ED bordering the North Inch. It was not dissimilar to Cumberland Street in terms of social structure and built form: tenements were interspersed with a few Georgian townhouses. Here turnover rates were moderately high, indicating a dynamic area. Figure 6.8 below confirms a slight decline in the highest social status group towards 1891 as suburban development expanded. The lower non-manual groups in Barossa Place replaced their social superiors as they were the only group that could afford to live in such houses without them being subdivide. The valuation rolls show little evidence of subdivision of property here. This could indicate control by the urban gatekeepers to maintain the area as high status, but no evidence exists to confirm this. Turnover trends initially suggest more skilled manual householders to the ED, but this group declined later in the period when the ED became identified with lesser professionals, many of whom combined office with residence.[228] Some new cottages built in the north of the ED (by Pullars of Perth for their workers) in the 1870s explains the slight rise in the unskilled group to the area.

[228] See the Post Office directories. The valuers, commercial travellers and salesmen seemed attracted to this area, especially as it was on a major road artery and so ripe for business.

The high level of movement may reflect a high level of structure / agency interaction and the resultant change in the area from one that was socially mixed to one that became increasingly polarised - a classic example of the growth in class consciousness and the desire to be socially and socio-spatially differentiated. The levels of class consciousness apparently increased in this area towards 1900 and this can be confirmed by the fact that the feudal superiors of this area had built mock-Georgian or large Victorian terraces within Barossa Place ED and beyond appealing to consumerism and middle class fashions (see chapter five and Findlay, 1984). The types of property built were appealing to the middle classes who lived in the town centre. These were found in greater number in central Perth, compared to Edinburgh. By 1891 the evidence suggests that central Perth was not respectable enough for the middle class and the valuation rolls show that shopkeepers were the only middle class inhabitants.[229]

Some of the decisions by agents to leave central Perth and move the short distant to the Palladian grandeur of Barossa Street can be noted from the valuation rolls and may be linked to the urban gatekeepers using the growing consumerism to attract high status residents to the area. The can be illustrated with some examples. David Adams, an agent, from 302 High Street was an early mover. He took up residence in Barossa Street in 1857. The property he left behind became occupied by a family of weavers, who co-incidentally had moved from a street adjacent to Barossa Street. David Cameron, a mason, moved from Barossa Place to the High Street in 1858, reflecting a growing pattern of skilled worker exodus in the late 1850s. John Gillespie is recorded as a rope maker in 1852 living in Barrack Street (in central Perth). By 1864 he was the owner of his own rope manufacturing business with advertisements in the directories. His move to Barossa Street reflected his new status, perhaps not as a capitalist, but certainly as one who had benefited from the capitalist system. Barrack Street was suited to those he employed, but not to the owner of the business. This demonstrates

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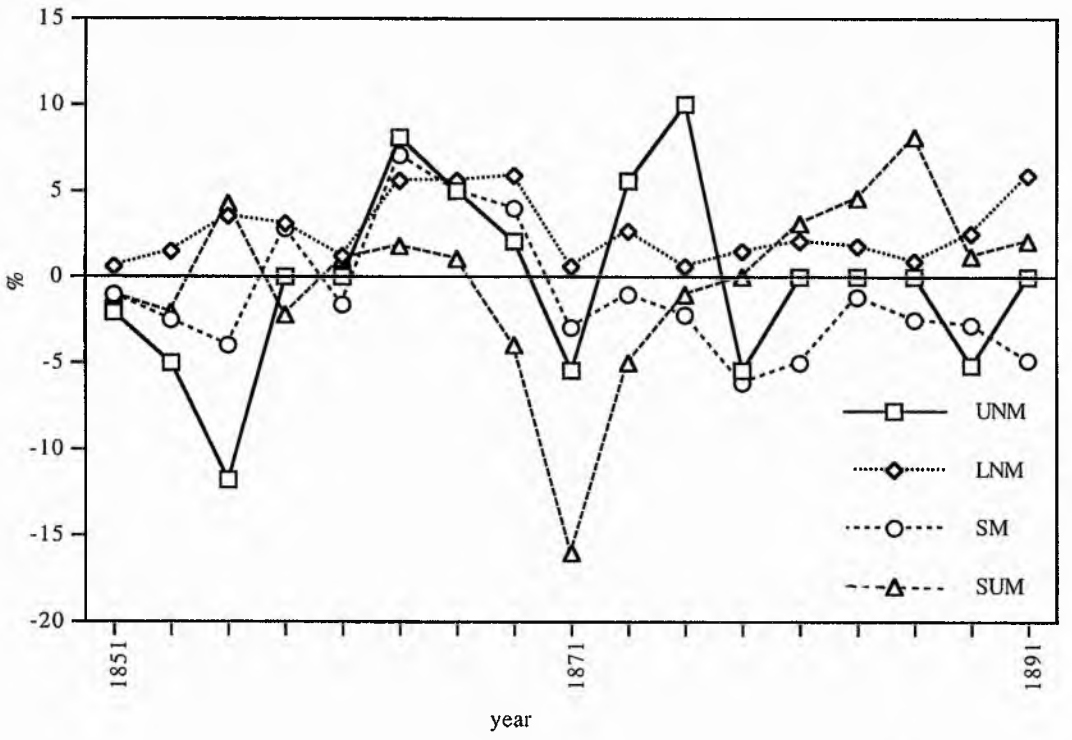
[229] Shopkeepers were often the least mobile middle class group as they were 'tied' to their occupational location, much like the lawyers in Edinburgh who combined their chambers with their homes in the New Town.

again the important inter-relationship of place with class and capitalism, an inter-relationship that is difficult to identify in the early nineteenth century. Other incomers from the city centre were Alex Keay, a commercial traveller, and John Whittam a clerk, who both moved to Barossa Street in 1875 from the town centre. These cameos show some insight into individual agents making residential decisions in the light of socio-economic structures and structural changes. Moreover, they represent a small sample of the myriad residential decisions taking place throughout Perth which impacted upon its socio-space.

Figure 6.8: The net effects (%) of population turnover on social status groups in Barossa Place ED, 1851-1891:



Source: Valuation Rolls 1855/6 to 1891/2 and Census 1851 -1891.

From the evidence for Barossa Street it can be argued that perceived status of an area was important to some people. In a community which was small relative to Edinburgh, there must have been a greater chance of residents knowing who was living where. Mr

Gillespie, above, became somebody significant in Perth society and with this went a change of residence. The awareness of a person's place in society can be thought of as a reflection of the underlying structures in society which intensified over the course of the nineteenth century in Perth. By this it is meant that capitalism and class became dominant in the way agents acted, thought and behaved. Class both constrained where an agent might feel he should live, and the way he should subsequently behave, but, then, so did financial circumstances - a point not unrelated to class.

As with Edinburgh, mortality was likely to impact on turnover rates in some way, but it must not be overstated. Unfortunately, the only statistic available is for the burgh of Perth. No ward or ED mortality breakdown exists. The burgh mortality rates are difficult to extrapolate to each ED because of the local circumstances and the wide variation in age profiles and social status structure. In 1861 the burgh of Perth recorded a crude death rate of 25.4‰, falling slightly by 1871 and again by 1891[230]. There is little evidence from the valuation rolls and directories to suggest that turnover was significantly affected, although no data exist to corroborate this.

- *'SUBURBAN' PERTH*

That Perth had suburbs, even by 1891, is questionable. They were certainly not suburbs along the lines of Edinburgh's, nor were they like the suburbs known today. In fact, at best, they were extensions to the city. In character they lacked the sense of suburbia that Morningside and Grange conveyed. Yet, the fact that houses were built, often to specification, meant that there was a *nostalgie de la banlieue* amongst some residents for 'out-of-town' residences that were nevertheless close enough to central Perth for the sake of convenience.[231] Thus, it can be argued that, the middle class residents of Perth were demanding 'suburban' style villas in parkland as a way to

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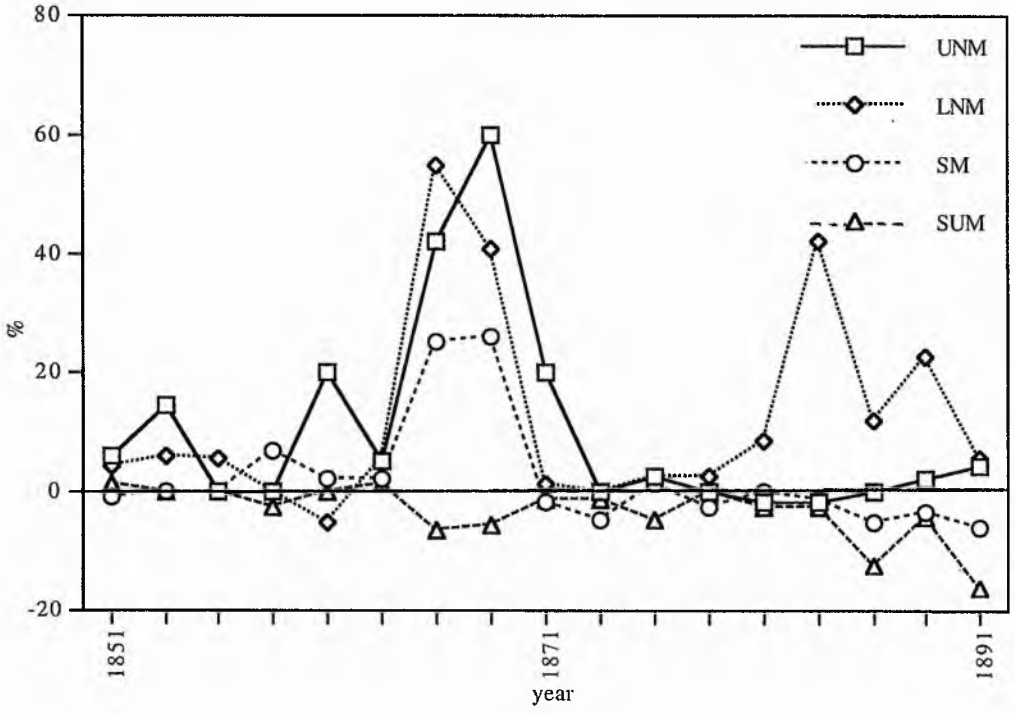
230 The crude death rate is not age specific but covers all ages: the data is from the Registrar General's summaries in the appendix to the census.

231 A drive into Craigie today shows that many of the large houses in this part of Perth are very different from each other. They have clearly been built individually and possibly by different architects. This suggests houses built to demand and a level of middle class householders wanting to be different from others.

escape the growing bustle (Graham-Campbell, 1994), given that the valuation rolls reveal that the first residents of the newly built villas were from the higher social status group.

The housing development in Craigie was not entirely middle class. In the 1860s the Glover's Corporation - one of the city guilds - built some houses in the area for 'deserving' sorts. The road constructed was called Glover Street, and it remains to this day. Figure 6.9 shows a dramatic change to the skilled manual social group in the 1860s as a result of this development. Both of the non-manual groups show other surges when the villas of Queen's Street were built in the 1860s. The substantial increase in the lower non-manual group in the 1880s represents this group replacing the original tenants of Glover Street when the latter were seemingly priced out by higher rents (see Stavert, 1985).

Figure 6.9: The net effects (%) of population turnover on social status groups in Craigie ED, 1851-1891:



Source: Valuation Rolls 1855/6 to 1891/2 and Census 1851 -1891.

Like the Colonies in Edinburgh, Craigie had low residential dynamism for the first few years after house construction. The initial inhabitants of Glover Street were skilled workers. Indeed, this is reflected in the social status change indicated by figure 6.9 and table 6.12. Between 1851 and 1871 there was an increase in the number and proportion of this social status group. However, over time, Glover Street became a haven for routine clerks and middle managers, especially as larger villas were built in Upper Craigie.[232] The agricultural workers left the ED to find new jobs in town.[233] Thus, the significant structural changes to the area identify Craigie as one in which socio-spatial change was very high indeed.

Many of the initial residents of Glover Street were 'respectable' employees of the railway company. They included George Binnie. He was the first resident of 46 Glover Street. His neighbour was James Faichney, a railway mechanic, who had moved from 125 South Street. Stavert (1985) argues that such employees were amongst the most highly paid in Perth, which perhaps explains how they could afford the price of the houses in Glover Street. Yet, by 1891 the street was very middle class. Perhaps working class pay did not keep up with the rising costs of housing here. Michael Lowe, a clerk, was a typical migrant from Watergate (in central Perth). The Watergate area had been popular amongst legal and clerical officials - by 1891 this was no longer the case as the area was dirty and surrounded by households the aspiring middle classes would not wish to be associated with. Nevertheless, the socio-spatial juxtaposition lasted longer in Perth that in Edinburgh, before the clerks realised that Craigie had better facilities and amenities and allowed them greater peace, heath and ability to be with socially similar neighbours. The Sasines record that feu-condition with respect to the cost of building were specifically laid down in Craigie, thus barring all but the higher earners. As with Barossa, mortality levels for the area are not known

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232 This is the reverse of what occurred in Colonies. Glover Street rose in social status, perhaps due to its location nearer the periphery and the higher rateable values. These factors might explain the difference with Colonies which was an area nearer the centre of town and with lower rateable values.

233 Post Office directories are of some use to note this trend, however, many members of working class are not listed.

specifically. But a fall in the death rate in Craigie was probably greatest for all of Perth reflecting the rising social status of the inhabitants.[234]

- INDUSTRIAL PERTH

Industrial Perth does not compare with Fountainbridge in Edinburgh in terms of the amount of economic activity that took place. The industries in Perth were three-fold: railways, whisky, and dyeing. They were all based in the southern part of the city, and the new railway cut right into their heartland, facilitating their growth. Pollution was restricted by the small scale of operations. Despite this, Station ED, which includes Kinnoull Causeway, bore a visual resemblance to Fountainbridge. The latter had taller tenements, but were similarly of dark sandstone, reasonably substantial properties, interspersed with a good many retail outlets, workshops and warehouses. In terms of rateable value there was also a similarity between the EDs.[235] Turnover of population was high in Fountainbridge perhaps because of the higher levels of structural change - industrial changes that were occurring too in Station, especially around the railway works which, by 1891, were the largest employer of men in Perth. The area saw a growth in housing stock as gatekeepers responded to this structural change to the area and the economy (Graham-Campbell, 1994). Change to socio-space, however, took a different form to that experienced in industrial Edinburgh. In the capital the trend was towards an increase in skilled workers, whilst in Perth the skilled workers - of the old trades of Perth - were gradually superseded by unskilled railway labourers, distillery workers and dyers. As such the area became identified with unskilled workers which explains the increased polarisation here as other social groups moved away.

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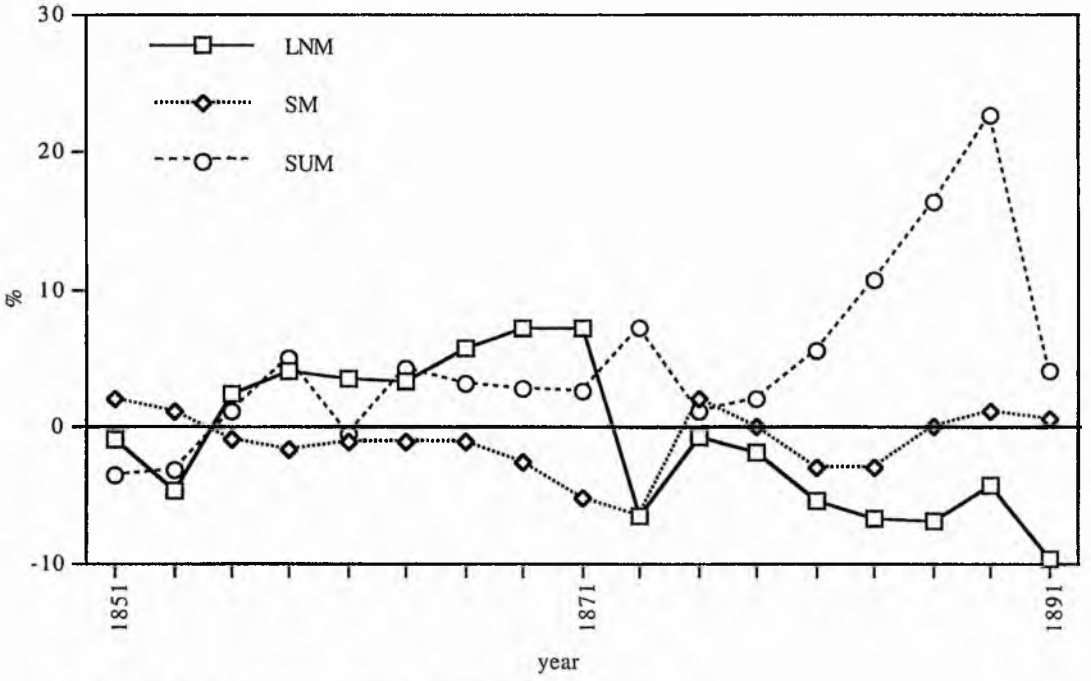
234 Although no actual figures exist to substantiate this.

235 In Station, the average rateable value was about five pounds a year - an eighth of the highest rates in Perth. In Fountainbridge, there were a good many properties around this mark, but the average was nearer ten, with some of the more substantial properties reaching eighteen pounds towards 1891. Compared with the highest rates in Edinburgh, the valuation rates in Fountainbridge were about a sixteenth, and therefore relatively less than in its Perth counterpart.

Figure 6.10: The net effects (%) of population turnover on social status groups in Station ED, 1851-1891:



Source: Valuation Rolls 1855/6 to 1891/2 and Census 1851 -1891.

The gradual decline in the skilled workers in Station can be explained by the fact that there was better accommodation built for them elsewhere (Graham-Campbell, 1994), hence they were attracted away by other gatekeepers. Furthermore, the skilled workers were taking many of the former homes of middle class households in the EDs south of South Street. The unskilled workers could not afford the rents in these areas and nobody was prepared to build or speculate houses on behalf of this financially less certain group. Thus, they lived in areas close to their work, in the increasingly rundown tenements vacated by the artisans like in Station ED. This structure / agency interaction - a socio-tenurial shifting of the population - was arguably the largest single contributor to socio-spatial change in Perth. It reflected both the nature of capitalism with its many labour divisions but also the ways in which the skilled workers desired something better than 'ordinary' labourers. This can be illustrated with some examples.

Alex Gregor was a railway guard who moved from South Street to Kinnoull Street in 1877. His colleague John Adams moved to St Leonard's Road, also from South Street, when he changed his occupation; he had been a labourer. Both of these moves resulted in lower rents being paid (see valuation rolls). This may have been a significant factor. However, other moves, like that of John Allen, are more difficult to explain. He moved from 20 to 39 Kinnoull Causeway in 1871. Out migrants included John Black, a bricklayer, who moved to Glover Street in 1862 and James Wallter, a joiner, who took a house in Carr's Croft. These moves reflect a desire by some skilled craftsmen to move out of an area increasingly populated by unskilled workers - to stay might have had a detrimental effect on business and social prestige. Mortality rates in Station were likely to have been higher than the average for the burgh because this was the area of heaviest industry and pollution. However, the effects of mortality on population turnover would again be small for reasons already outlined.

- MARSHALL PLACE

Marshall Place had a high turnover which became variable over the period (see table 6.12). The change in social status was nevertheless significant, which is in keeping with what is known about Royal Circus in Edinburgh - a comparable area.[236] The areas, even today, look similar, with spacious Georgian townhouses rising to about four storeys. Further, Marshall Place contained 'back streets' similar to the service streets of Royal Circus. Marshall Place, however, did not maintain the upper non-manual social group that Royal Circus did (see table 6.1): instead they declined. The main incomers were the lower non-manual social groups.

Robert Christie was a surgeon who moved out of the High Street in 1857 to take up residence in Victoria Street (in the Marshall Place ED) where he remained for forty years. In 1851 high ranking professionals were common in the High Street: they were

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[236] The rateable value of property in Royal Circus averaged about £120 a year, in Marshall Place it was £40. While this seems radically different, it is important to point out that forty pounds a year rateable value in Perth was the highest in the city - just as the rates in Royal Circus were the highest in Edinburgh.

all but absent forty years later. The High Street was increasingly dirty and unsuitable for professional practices and residents. Thus, Victoria Street, William Street and Marshall Place all gained lawyers, doctors, and teachers. The Misses Davidsons took up residence in Marshall Place to teach girls in 1860. They too had come from the city centre - an area perhaps unseemly for girls of a high social group who desired education. However, the trend had changed by 1891. The previous generation of migrants to the area had moved on, perhaps in retirement, or to the suburbs which now competed with Marshall Place in terms of status. Indeed, it was in the interest of the gatekeepers to enhance their newly built developments to attract the upper non-manual householder. The town houses were taken by clerks. Miss Shepherd, a teacher, moved to the grand houses of Balhousie from Victoria Street; Mr Donald, a clerk, took up residence in the house she vacated. James McCall was a another of the refugee clerks from the High Street who moved to South William Street in 1887. Robert Low, a tax official, joined him, so too the architect, Mr Heiton, whose move may represent the desire for a property that combined office and house, or simply that he was on a stepwise migration outwards as his social status as an architect is seemingly contrary to the changes in this area.

Marshall Place fluctuated considerably in terms of social group composition as a result of this turnover suggesting areas of high agency activity associated with class awareness and housing market activity in the town. Victoria Street was constructed during the 1870s and attracted at first middle class buyers. For instance, Gregor Watson, the apothecary, who had a business in South Street. He moved to a newly built property in Victoria Street in 1862 which might have been the result of success in business (he had previously lived above shop) or a desire to escape the growth of working class central Perth. When the middle class moved on, their properties were let to skilled workers vacating the rapidly deteriorating city centre. Gregor Watson's own house (number 17) was let in 1887 to a Mrs Campbell - a seamstress who kept lodgers (there is no record of where Mr Watson and his family went to).[237] The graph below is

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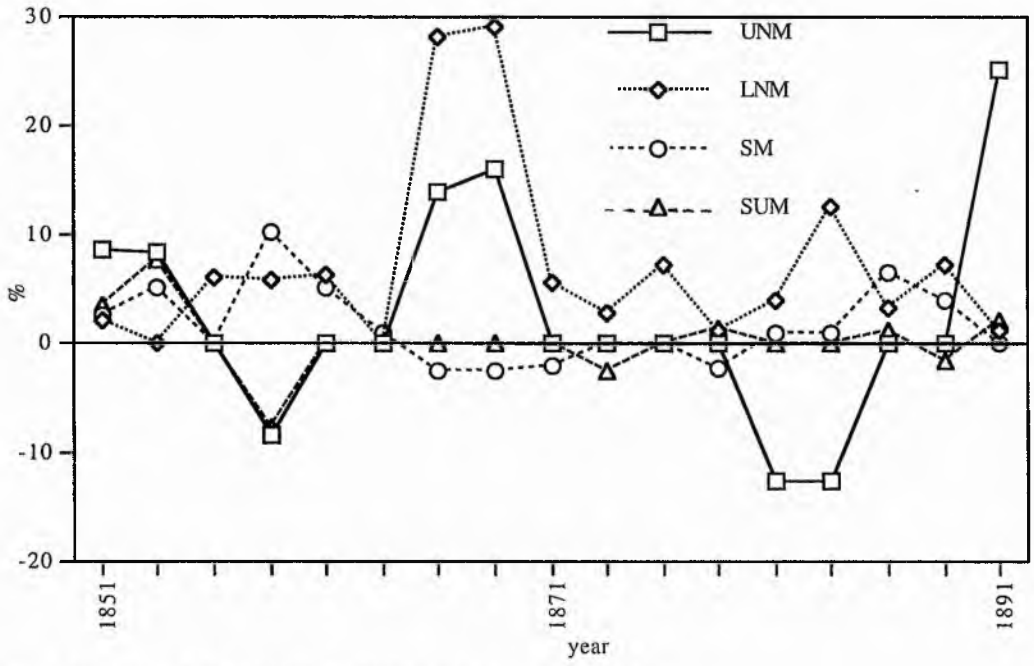
237 Valuation Rolls, Perth 1887.

not particularly helpful in suggesting any sustained trend. There was little change in the levels of unskilled households, and skilled manual households declined in the period 1860 to 1875 and again from 1885, during periods of growth in the non-manual groups. Over the whole period, the latter show more positive than negative change to composition, albeit with considerable fluctuations. There are two periods of high change in social status composition as a result of turnover; namely, in the 1860s and the late 1880s. In the first period the area increased its non-manual households - largely the result of new building - and in the second period the highest social group again increases its presence here.

Figure 6.11: The net effects (%) of population turnover on social status groups in Marshall Place ED, 1851-1891:



Source: Valuation Rolls 1855/6 to 1891/2 and Census 1851 -1891.

- PERTH OLD TOWN

Perth's mediaeval core (the area around St John's Kirk), like Edinburgh's was the most overcrowded part of the town. There were, however, few reported sanitary problems or

epidemics and fresh water was generally easily available (Graham-Campbell, 1994).[238] Overcrowding does not appear to have been an issue, in what was the most crowded part of town. Rarely did density per windowed room exceed two and a half persons as it did in Edinburgh's Old Town. Yet relative to their respective cities, the two old towns are reasonably comparable. The valuation rolls for Perth did not record the names of all householders, as those living in properties under two pounds ten shillings rent a year were excluded. Nevertheless, all *properties* are listed, and so confidence in the data presented is higher for Perth than in Edinburgh where many properties were omitted completely if householders were not recorded. Perth's vennels were less warren-like than those found in Edinburgh, although they had a similar herring-bone pattern.

Unlike Edinburgh, in High Street East - the 'old town' ED considered for Perth - there was not a complete abandonment of the area by the higher sectors of society. Both non-manual social groups maintained a vestigial presence throughout the period. Perhaps this reflects the fact that central Perth was less 'downgraded' than central Edinburgh. Table 6.12 shows that the lower non-manual social status group composed over ten percent of households in 1891. This was possibly due to the better conditions in Perth *vis-a-vis* Edinburgh, or simply represents the reduced scope for ED-sized areas to become socially homogenous, given the overall size of the town. By 1891, the skilled manual social group had a higher concentration in High Street East compared to its presence in Ramsay Close. This difference, though, is likely due to the respective sizes of Edinburgh and Perth. Figure 6.12 below shows, however, that, even in High Street East turnover fell over the period: a trend seen elsewhere including in the peripheral districts.

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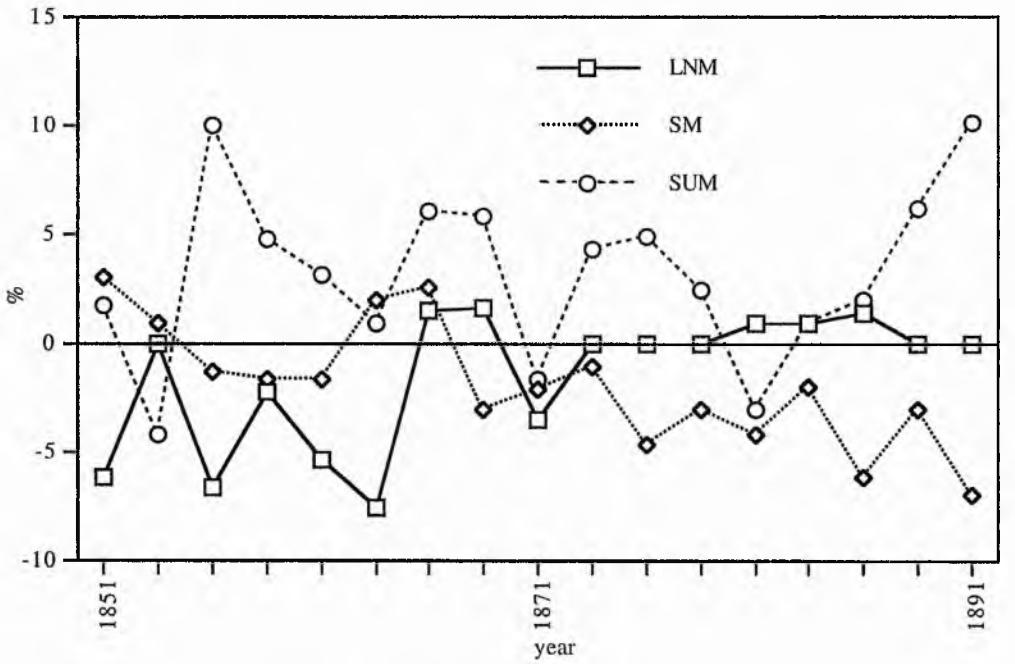
[238] It is possible, however, that mortality rates were higher in Perth than in Edinburgh, at least later in the century, as Perth did not have the benefit of sanitary reforms and a medical health officer that the capital did.

Figure 6.12: The net effects (%) of population turnover on social status groups in High Street East ED, 1851-1891:



Source: Valuation Rolls 1855/6 to 1891/2 and Census 1851 -1891.

Turnover in High Street East is, at first, dramatic. However, the impact mortality had on this cannot be gauged (it is likely that the highest mortality in Perth throughout the study period was in the High Street). The graph above shows considerable fluctuation in composition as a result of residential mobility. The main point to note is the general increase in the unskilled group. This was at its greatest when the decline of the lower non-manual group (in the mid 1850s) and the decline of the skilled households (1880s) were at their greatest. Throughout the period the skilled group is in decline. These trends were almost certainly due to changes in class consciousness and perception of residential areas. The High Street was no longer accepted by the middle classes, as their flight outwards demonstrates. This led to a polarised area of unskilled workers. Those moving in were generally unskilled, some were agricultural labourers like George Black and his family. He was listed in the 1861 census as an agricultural labourer. The Post Office directory lists him as dairyman the following year at the same address. By 1871, he was a porter. John Grahame was a bookmaker in 1864 who

fell on hard times and moved from his shop in Carpenter Street to a tenement workshop in Meal Vennel.

The difficulty with High Street East ED is that those who moved into the ED (especially from outside Perth) are difficult to trace. Here was the highest number of migrants from the Highlands, and the largest number of unskilled intra-urban migrants some of whom are hard to trace because of frequent changes in their job description. Some unskilled residents can be traced. For example, John Irvine arrived in 1867 from North William Street. He was a smith's labourer and his move is seen as part of the polarisation occurring which meant that few unskilled workers were resident near the South Inch by 1870. John Shearer was a weaver from Dovecot who moved his agricultural family to the city centre. John Langlands, another weaver, and his family made a similar move. Thus, the trend to emerge is that unskilled workers were beginning to congregate in High Street East in considerable number as they left the suburbanising outlying EDs or the high status EDs near to the Inches. They replaced the skilled workers and the middle classes who were making the same journey, only in reverse. The apparent 'negative' image from figures 5.9 - 5.12 in the previous chapter highlights this phenomenon.

- BALHOUSIE

Figure 6.13 below shows a new ED, Balhousie (BB). It was carved out of Barossa Place ED when several new roads were built in the ED in the late 1870s. The feu charters stipulated superior quality town houses in a similar style to those found in Barossa Place.[239] On the completion of the Balhousie Estate, the ED became the most exclusive in Perth, with the rateable values of properties exceeding those anywhere else in the town - often sixty pounds a year. Barossa Place, by 1891, had houses rated at fifty pounds per year.[240] Thus, from the outset, Balhousie was designed to attract the highest income earners of Perth, and did so (see the discussion of Marshall Place). Yet,

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[239] Register of Sasines: Perth 1887: 163, 34-41, 54, 61-63: 1887: 188, 12-17 (see also Findlay, 1984).
[240] See the valuation rolls for Perth from 1880 for Balhousie Road.

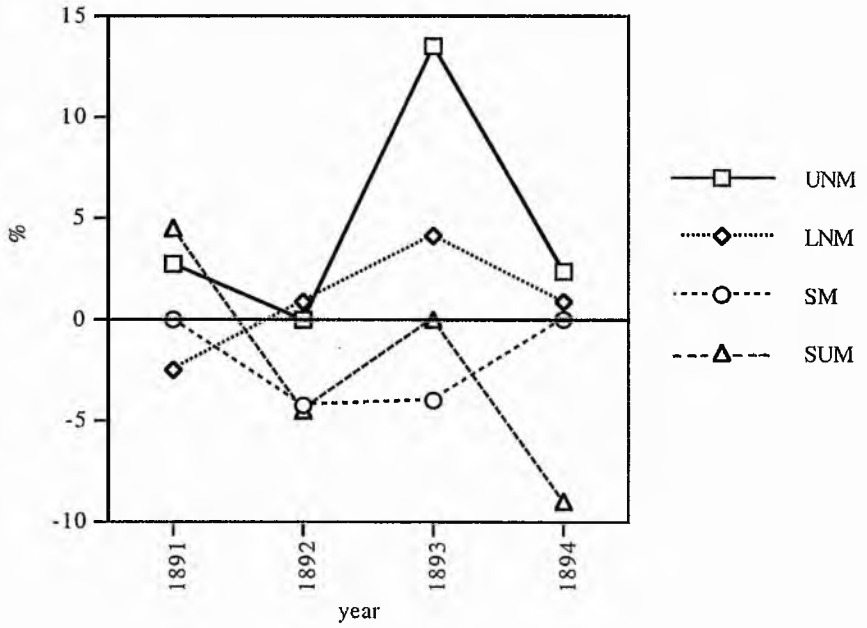
as it still contained a few small rural properties on the main road west (the Dunkeld Road), there were also significant numbers of manual workers. The valuation rolls from about 1886 identify the first occupants of newly built property in this ED: generally these were owner occupants. James Dent was a surgeon probably from outwith Perth as he cannot be traced in the directories. He moved into a town house on Balhousie Road. His next door neighbour was an annuitant, Mrs Gowrie, presumably a widow. This is interesting, since it demonstrates two things: first, that widows were not completely sessile after the death of a their spouse, and second, that women were making residential decisions which impacts upon socio-space. Other incomers to Balhousie included a couple of doctors, a school master of the nearby Rose Academy and a retired army officer. Dr Alexander Penrose had moved from County Place and Dr Baxter from Methven Street. Both moves may reflect a desire to live in a higher class area.

David Graham-Campbell (1994) speaks of the new housing close to the North Inch (Balhousie) as modern and well built. The land had been feued by the Balhousie Castle Estate and the feu charters specified nothing more than 'townhouses and residential villas'.[241] Graham-Campbell's description of the area suggests that the houses had many new amenities including tapped water and electricity. It is almost certain that the houses would have had water closets inside. These sorts of amenities would have been used by the owners of the Balhousie Estate housing to attract middle class residents to the area, from areas such as Marshall Place. Domestic amenities were part of the general growth in consumerism and fashion commented upon in the previous chapter. The growth in consumerism added to the social differentiation of the status groups, but also enhanced the socio-spatial differentiation too, as few other areas in Perth would have had the amenities of Balhousie. Thus, the socio-economic structures of class, place and capitalism are used once again to attract migrants to an area with a resultant socio-spatial segregation. The effects of mobility can be seen in the graph below, but it is for a very restricted period. Because of the short time period involved, it is

241 Register of Sasines: Perth 1882: 154ff.

impossible to detect any temporal trends emerging in this ED. Its inclusion is to illustrate the type of new development in Perth in the 1890s and the social groups such development attracted.

Figure 6.13: The net effects (%) of population turnover on social groups in Balhousie ED, 1891-1894:



Source: Valuation Rolls 1890/1 to 1894/5 and Census 1891.

Because of the type of housing to be found and the conditions laid down with respect to building and price, Balhousie was well suited to the middle classes and, even within this fairly broad group, to the upper middle class in particular. The area is situated near parkland and the grandeur of the area was an attribute sought after by Perth's successful residents who could place themselves here, adding to their already influential status. Such symbolism within a town added to an agent's identity and shows structure / agency interaction at work, as the socio-space of Balhousie was used to reinforce an agent's place socially - a conflation of the social and the spatial.

The analysis of the turnover for Perth reveals that agency factors of change were just as influential here as they were in Edinburgh. In the smaller town, turnover rates have

been shown to have been as high as those in the capital, but change was probably at a slightly slower pace. It is clear, however, that there is a link between agency decisions and structural factors of change, influences and constraints, which confirms that the interaction of socio-economic structures and human agency action was important in driving social spatial change in both Perth and Edinburgh. Of course, this must be seen in the light of numerous limitations with the data and methods of analysis and before a firm conclusion can be drawn some of these limitations of the above analysis need to be outlined.

6.5 MICRO-SCALE ANALYSIS: SOME OBSERVATIONS

The turnover analysis of both Edinburgh and Perth attempts to assess the ways in which micro-areas were changing in terms of meso-sale socio-spatial change. Residential mobility was a significant driving force influencing the changing nature of the micro-area, which in turn influenced the meso-scale socio-space. However, the use of micro-areas to assess the role of migration encounters important limitations.

The first problem arises over the choice of data sources. A source is needed which lists individuals or individual households on a regular basis. Moreover, the source should be as reliable as possible. The most obvious choice of data for analysing population turnover are the yearly valuation rolls. The fact they are available annually and not decennially, as with the census, proves enormously helpful in recording individual moves, yet several problems are associated with the use of valuation rolls.[242] The valuation rolls were drawn up annually for the municipal corporation to levy rates. Naturally the corporation was interested in recording the person who paid the rates and, therefore, in some cases not all tenants were included. The Scottish feuing system, however, does allow a more complete picture than the English system, as the valuation rolls differentiated between owner, tenant and occupier - these could be the same person, or up to three different people. It was usual in Scotland for occupants to pay

[242] For a full discussion of these problems see the discussion in chapter three.

the rates as part of their rent agreement and, thus, they were more likely to be listed (Sinclair, 1994).

Even when valuation rolls are fairly complete, there are still potential problems with the identification of individuals, and this becomes most acute when tracing an individual. Names were commonly misspelt and occupations given can be out of date or inaccurate. Thus, as a guide to social status, the valuation rolls are less certain than the more reliable census. The tenement system in Scotland meant that house numbers were often nothing more than a formality. Further, there were fewer Christian names in use in the nineteenth century and, in Edinburgh and Perth, about half of all men shared one of four names - James, George, William and Robert. This is compounded by similar or the same surnames. Under such circumstances tracing an individual is difficult. This is particularly true of the working classes, who, unlike the middle classes, were less likely to be listed in the annual Post Office directories which are also a very useful source for record linkage, albeit extremely selective in terms of who is included therein. Therefore, individuals who can be traced are often those with a strange name, or those included in a directory - hardly a representative sample of the total population. Nevertheless, the albeit selective information gleaned from examining the residential moves of named individuals provides valuable additional clues to the nature of structure / agency interaction in the past.[243]

It is also important to be accurate in the classification of migrants into a socio-status group. To use the valuation rolls to determine an agent's social status is potentially misleading because occupation was not important to a valuation officer, who from year to year may not have enquired about a change in an individual's occupation or whether he had one at all. The census, of course, is much more reliable. However, as it is taken only every tenth year, record linkage using the census alone misses many moves within a decade, especially in a period of high residential mobility. In the present

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[243] Record linkage was carried out going forwards in time following the move of an individual, as well as tracing an individual backwards. The latter is easier and has the advantage of losing no record through death. Mortality is an important factor on turnover.

study, the census has been used mainly to classify individuals into social groups as discussed in the previous chapter. The examples of individual movers used rely on occupation from the valuation rolls, although in some instances it was possible to verify the occupation from the census. Individuals of a known occupation were traced to demonstrate how members of the various social status groups dealt with migration decisions. The socio-spatial changes of the burghs which had been mapped in previous chapters began to make more sense when the trends of mobility at an individual agent level were explored and related to the structures that are likely to have influenced agency decision making within an ED.

The analysis of mobility in this chapter has continued to use the socio-status typology introduced in earlier chapters. The main conceptual difficulty with this in the study of segregation and in the mobility process which brought such segregation about, is whether four groups are adequate. Were mobility decisions made on the basis of belonging to one of these four socio-status groups? This is unlikely, so the worth of these social groups must be questioned.[244] They are the broad categories used to identify socio-spatial polarisation statistically and cartographically. But in terms of residential decision making, the subtler distinctions within classes, social groups and occupational groups would have been considered. Thus, doctors clustered in certain Perth Streets, highly skilled precision tool makers clustered in Edinburgh's Fountainbridge, whilst some of the closes of Edinburgh become associated with very specific trades or crafts such as fleshing, skinning and dyeing. The individual agent perceived his or her 'place' as a result of the precise position he or she inhabited *vis-a-vis* others, within the class structure, *and* within his or her class. This reinforces the notion of intra-class stratification, a phenomenon drawn to the attention of Edinburgh society as early as 1861 by John Heiton. The residential decision making process of the agent, therefore, is constrained by the positioning or placing of an agent within a class group and as the previous chapter showed by the influence of the housing market mechanism. Undoubtedly these were not the only reasons for moving - the need of a

244 Although Dennis (1984 p 187) states categorically that 'we should define a few, very broad, but weakly perceived classes in which all interaction is intra-class'.

larger house because of a growing family may represent another - but this desire needed to be met within the constrains of finance and not all agents had access to the necessary capital. Class position, therefore, probably had a dual influence on migration in terms of both giving rise to aspirations and determining whether or not individuals had the means to achieve these through moving house.

The motives for moving as seen in this thesis were often class or aspirant based. Yet, in reality, other factors such as marriage, death of a spouse, new job and retirement were also important. Furthermore, children would leave households and set up home elsewhere. Such personal reasons for moving lie outside the structuration process. By this it is meant that reasons such as marriage or desire for a larger house to accommodate a larger family are not reasons that have been influenced by class motives, or the sense of being out of place. Furthermore, there would have existed a degree of indifference amongst many within Edinburgh and Perth about where to live. Choice of housing was not a central consideration to everyone. The point is that there existed non structure / agency reasons for moving which contributed to the changing socio-space, and this distinction cannot be revealed by the turnover analysis. Consequently, the turnover analysis *per se* cannot claim to be a comprehensive assessment of how agency factors within structures changes the micro-scale socio-space.

The ways in which the micro-areas were changing over time, as viewed in terms of the turnover analysis, can be linked with the changes in terms of structural changes and meso-scale influences. Thus, the effect on the micro-areas of population turnover fits with the increasing social polarisation evident in Perth and Edinburgh, and the structural and morphological changes known to have taken place within the micro-areas influenced by the meso-scale factors. This seemingly reveals a paradox (or perhaps more appropriately the structuration duality), namely, that the changes at the meso-scale are influenced themselves by the micro-area changes, yet the micro-area changes are influenced by the meso-scale factors. This is precisely how Giddens'

structuration process works. Structures exist because agents enable them to, yet the enabling action of agents is itself conditioned by these very structures. This process is interactive, a duality between the structures and agents which transcends scales. This is an insight which holds for both Edinburgh and Perth, with the socio-spatial changes being the outcome of this interactive process.

This does not solve the problem of 'non-structuration' turnover. It cannot even be gauged from the analysis how widespread other reasons for moving were. Circumstantial and anecdotal evidence, however, does paint a picture of a society which made residential decisions based upon class, place and the actions of urban gatekeepers. Some of this evidence has already been presented using information from feu charters and housing co-operatives. Other nineteenth century sources also lends weight to this conclusion, albeit in a rather stereotypical way. Pocock and Hudson (1978) cite the case of an 'Upstairs Downstairs' script where an upper class London lady is trying to determine where to live after she is married. She cannot live in Bayswater because that is where her nanny was from, nor can she live in Brompton because that area houses tradesmen. Although somewhat stereotypical this illustrates the point that class and place are important consideration for some.[245] Furthermore, there is no evidence to suggest that this apparent snobbery ended with the middle classes. Begg's action in Edinburgh, creating an area for deserving working men, and the setting up of many artisans clubs, reading rooms, soirees and so on, in both Edinburgh and Perth, highlight the fact that social differentiation was widespread and both intra- and inter-class (see Gray, 1973; 1977). Gaskell (1977) concurs with this in his seminal study of middle class housing which, he maintains, was a residential extension to their already differentiated lives. Furthermore, Gaskell believes that the middle class were motivated into mobility by an increasingly congested city centre and the social aspirations which associated the idea of respectability with the suburb. Thus, it can be argued that, despite the absence of sources clarifying motives for mobility,

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[245] See also G & W Grossmith: Diary of a Nobody written in 1892 which colourfully illustrates middle class preferences for housing in particular areas and the specification many of them made, including wrought iron railings, veneered furniture, floral wallpaper and imitation marble fireplaces.

much intra-urban movement in the late nineteenth century was class or aspiration based and so fits within the structuration process outlined above.

The use turnover analysis using heads of households highlights a further important consideration which was also raised in the previous chapter, namely who the head of household was. In most instances this was a male. But, was it the male who exclusively made residential decisions,? The role of women in such decisions is certainly under-researched, not for a want of enthusiasm but for a lack of suitable sources. The extent to which feminine influence over husbands materialised in intra-urban migration is a moot point. Other women would have made residential decisions themselves, especially in the case of spinsterhood, widowhood or career. Furthermore, younger men and women in the early stages of their lives may not have been householders but lodgers and, as such, their impact on socio-spatial change is completely overlooked. This is a notable omission as the number of such people would have been considerable. Unless analysis of the entire population of an ED is undertaken the total impact on socio-space of all agency movements cannot be fully ascertained. However, arguably, it was the movement of stable households into an area which was most influential in setting its social tone. More transient young lodgers could well have had a more subtle impact on the perceived social status of a neighbourhood.

The use of male heads of household and the male dominance of family life was part of Victorian culture that the researcher cannot escape. It was necessary to use heads of household in this study as the data for them are most readily available, and a survey of the entire population is too great a task. Nevertheless any researcher ought to make sure that his or her study is representative and this point extends beyond the gender issue. In the study of population turnover in Edinburgh and Perth only heads of household in selected streets were chosen for analysis. The choice of streets within the selected EDs was designed to be as representative as possible and this is particularly pertinent for Edinburgh. However, the turnover analysis cannot claim to be wholly

representative of the entire geographical city but only representative in terms of broad social structures with perhaps the lowest social groups slightly under represented because of tracing difficulties. The important points to consider are how areas change and how agency action plays a role in this change.

Turnover analysis will be greatly affected by the size and boundaries of the areal unit used. For Edinburgh and Perth, EDs were used. Any areal analysis will underplay intra-urban migration because it may ignore moves made within an area Unskilled workers frequently moved very short distances as a result of their insecure incomes and the constant search for cheaper accommodation. Others were simply moved around by a landlord, or were victims of slum condemnation of their home. The use of smaller EDs (or other areal units) might reveal higher intra-urban turnover. EDs were selected as data are readily available which indicate the occupation and age of heads of household. However, streets selected from the valuation rolls might equally have sufficed. Street sizes vary enormously, though, and selection is more difficult without the additional information the census yields. Moreover, the use of valuation rolls to ascertain socio-status is undesirable because of unreliability. Thus, EDs from the census seem the most sensible areal unit to employ. They are small enough to note finer variations and they are nevertheless large enough to ensure considerable reliability in terms of a good representation and cross section. A typical ED would include about 120 households, a size that allows proportional change in status composition to be calculated, whilst avoiding some of the problems associated with very small numbers. Any study of intra-urban migration and spatial change in the nineteenth century will encounter similar problems and limitations. Interpretations offered must, therefore, be judged for their plausibility rather than treated as definitive or absolute.

6.6 CONCLUSION

This chapter has focused on the micro-scale and examined the ways in which the actions of agents (residential mobility) were related to the meso-scale socio-space of Edinburgh and Perth. The micro-areas considered were constituent parts of the wider urban mosaic and what occurred within the small area cannot be seen in isolation from the whole city. The structural changes occurring in Edinburgh and Perth did have an impact on its constituent EDs and micro-area changes, in turn, collectively shaped urban meso-scale space. Both the inter-relationship between factors at different scales and between structures and agents contributed to urban change. Agency action was considered in this chapter in terms of residential decision making and mobility. It was the residential decisions by the many thousands of individuals which affected socio-space. But these decisions were not alone in influencing socio-space. The previous chapter has already shown how socio-economic factors within Perth and Edinburgh had similar influences. Indeed, these factors impacted upon the micro-area and the subsequent action of agents must be seen in the light of these influencing factors. But the situation was also dynamic so that, recursively, the actions of individuals were maintaining the socio-economic factors such as class consciousness. The result was socio-spatial change which took the form of increased social and residential segregation.

The structuration grid in chapter one showed action of agents in terms of three types of interaction: social, moral and economic and political. In this chapter the collective or solidaristic actions of agents have been considered and the insights from the structuration grid have allowed the construction of a plausible account of the motivations for these actions. Social interaction seems to have become increasingly polarised in the later nineteenth century with residential areas characterised by greater social homogeneity. In terms of moral interaction, the ways in which agents sanctioned their actions was also becoming polarised. The social groups were acting more solidaristically and this can be seen from the turnover analysis which suggests that

members of social groups tended to act similarly in making residential decisions. High status groups were differentiated through consumption habits, style of life and aspirations, occupying their 'moral high ground' in the suburbs - driven by the imperatives of capitalism, created a class-conscious society in which certain groups extended their control over capitalist resources including the housing market. It was in the interests of capitalist and urban gatekeepers to ensure that such divisions were maintained, supporting their own positions of dominance and maximising their financial returns.

Pooley and Turnbull (1998 p.299) have recently asked 'did migration matter'? The question was posed in the context of a discussion of the role of migration in social, economic and cultural change. The structuration grid suggests that mobility, as a modality, facilitates the interaction between class and communication. Migration was a response to changes in the structure of the economy,[246] with the enclosure movement provoking a widespread exodus from the countryside to the city (Whyte, 1983), but intra-urban migration also contributed directly to changing social interaction (communication) through its impact on the socio-space of the city (Pooley, 1979). Thus migration was a mechanism through which class / capitalism influenced, and was influenced, by social organisation. The outcome was profound change in the urban mosaic of the nineteenth century city.

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[246] Migration as the outcome of structural changes in the economy is easy to imagine, yet at times difficult to prove. Jones (1990) has shown that as economic activity increases so do levels of movement, as populations move to centres of employment. This can explain national or even international movement of people fairly adequately. But this does not show scale and pattern as comprehensively. In order to do this, Whyte (1991) has suggested international comparisons of adjacent countries. This, as well as revealing scale and pattern of migration, highlights causes and effects along with the underlying structures which influenced them.

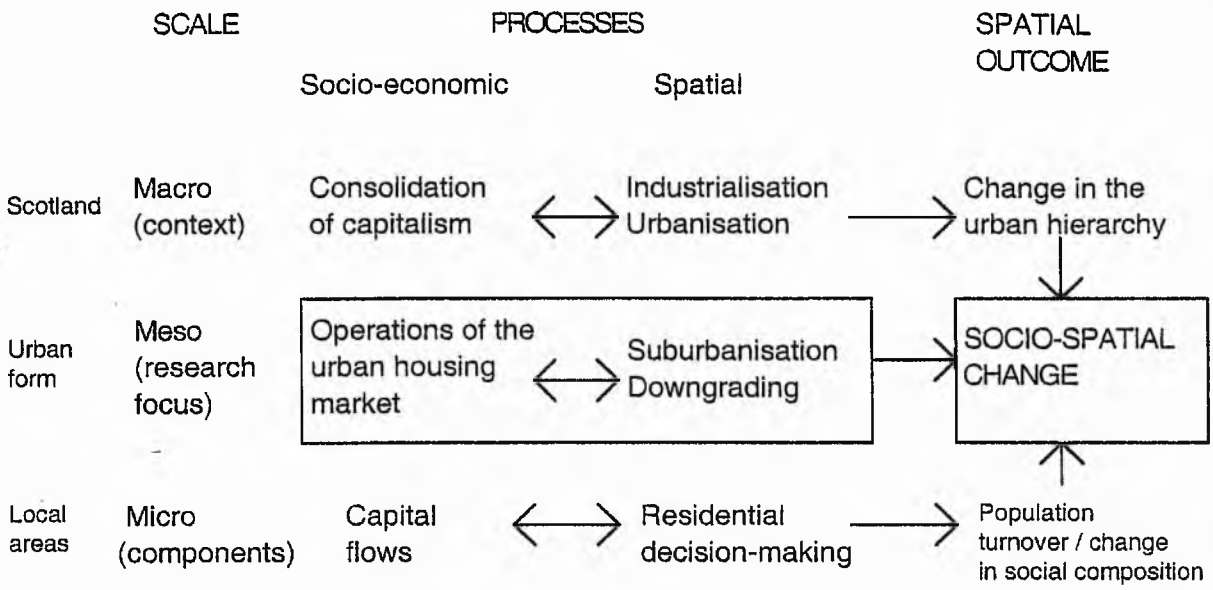
CHAPTER SEVEN

CONCLUSION

The concern of this thesis is urban socio-spatial change in the late nineteenth century - a topic which chapter two shows has received a reasonable amount of attention over the years. However, much of this attention has tended to focus on certain aspects of the city, or on certain aspects of change. Consequently there has been a lack of integration of the dynamic elements of urban change. This thesis, as well as highlighting the methodological lacunae, has sought to fill it, suggesting that urban socio-spatial enquiry can be advanced by viewing socio-spatial change as the outcome of the reflexive relationship between socio-economic structures and the actions of human agents. Furthermore, it has argued that socio-spatial change is most usefully understood by considering this reflexive relationship at three different yet inter-related geographical scales. The three scales of enquiry and the equal emphasis on the role of structures and agents have enabled a series of dynamic relationships to be uncovered which together explain the nature of urban socio-spatial change and the reasons why it took the form it did, namely socio-spatial polarisation.

Just as the structuration grid in chapter one helped to frame the discussion of the chief concepts used in this thesis, figure 7.0 below provides the basis for summarising the main relationships explored in this thesis. The three scales of analysis are shown along with the processes operating at each scale and the spatial outcome of these processes. It can be noted that the meso-scale row has been highlighted to emphasise the fact that this was the main focus of the research. However, figure 7.0 also shows the inter-relatedness of the scales with a series of arrows, and this recognises that meso-scale processes and patterns are part of the outcome of interactions between macro-scale structural change and the micro-scale impacts of the behaviour of many individual agents. This is an important departure of this work from much existing work, as it breaks down the main dualism present in previous work.

Figure 7.0: The main relationships examined in the thesis.



The macro-scale study provided a context for examining the major socio-economic structures associated with industrialisation and the advancement of capitalism within the Scottish economy. Using a settlement hierarchy and statistics from the censuses, the national economic and spatial processes were sketched. This highlighted industrialisation, urbanisation and the consolidation of capitalism. Settlements that showed a greater propensity for embracing economic change were the ones advancing in the hierarchy. These were generally western lowland burghs. The context for urban socio-spatial change was further advanced during the macro-scale analysis when links between macro-scale structural changes and the (meso-scale) internal spatial structure of burghs were examined in terms of economic sectors, population change and in-migration.

The aims of the meso-scale analysis which followed were to assess the form and the extent of the spatial impact of industrialisation within the two case study settlements of Edinburgh and Perth, and to analyse the reasons for this change focusing on both socio-economic structures and the actions of individual agents. The relationships at this scale are shown in figure 7.0. Thus, meso-scale analysis identified the main impacts of the macro-scale processes which influenced change within the city. The consolidation of industrial capitalism meant an increased division of labour which increasingly spread from the workplace to the home creating socio-economic classes. Consequently class consciousness became an important factor in society and had a profound influence on the housing market. For instance, evidence suggesting increased class consciousness within the housing market can be found in the Register of Sasines and valuation rolls. The operations of the housing market reveal that certain urban gatekeepers were acting in a way to create socially specific areas as, for example, in Dr James Begg's Colonies scheme, or Sir George Warrender's Marchmont estate. Whether these urban gatekeepers were responding to class consciousness, creating it, or a combination of both, the spatial result of their actions was socio-spatial differentiation.

Although no detailed investigation was undertaken, two spatial processes were also noted from the analysis of Edinburgh and Perth, as figure 7.0 shows. Both affected socio-space and were not unrelated to the growth in class consciousness. First, suburbanisation was extensive in Edinburgh and embryonic in Perth. Nevertheless, the form it took in both burghs heightened the middle class' socio-spatial polarity from other groups simply because it accentuated social differences. Second is the process of downgrading which is, in many ways, related to suburbanisation. Marxian analysts, especially, emphasise the fact that as capital flows into the suburbs, other areas of the burgh become downgraded. From evidence in Edinburgh there is certainly some truth in this. The Old Town of Edinburgh was a much neglected and much maligned part of the capital (Littlejohn, 1866). Although downgrading continued during the early part of the study period, after a number of Town Improvement Acts and as a result of

Littlejohn's Sanitary Report, the Old Town did improve considerably by 1891. Perth, being a much smaller burgh, did not suffer from the same problems of downgrading, although clearly there were poorer areas that did suffer from lack of investment.

Evidence from newspapers and a number of official publications presented in chapter five suggested that a growth in consumerism and life-style differences increasingly differentiated the classes. This social differentiation was increasingly translated into spatial differentiation as a result of suburbanisation, for instance. This suggests that the social and the spatial became difficult to separate in the late nineteenth century. Suburbanisation accompanied an increase in consumerism that the middle classes used to further class distinction. Class distinction also contributed to the structured feeling of agents which in turn influenced residential decision making. An increase in class consciousness - the result of changes in industrial capitalism - led to growth in an agent's sense of place within society. This prompted agents to act in a way that reflected their perceived social place. Evidence in this thesis suggests that this process was solidaristic, inasmuch as groups of similar status individuals acted in similar ways (see also Bledsoe, *et al*, 1995).

The meso-scale analysis revealed a socio-spatial differentiation of social groups within Edinburgh and Perth. What it could not do, however, is adequately explain the role of individual agents within this. Thus, a smaller scale of analysis was required which allowed an examination of the components of socio-spatial change. The focus of the micro-scale study was on individual agents and their decision making. A study of micro-areas allowed an investigation of the 'locale' in which agents made decisions: in other words, the arena in which they acted (Giddens, 1982). Figure 7.0 points to the fact that the main processes operating at the micro-scale were capital flows and residential decision making. The former were examined briefly by considering the ways in which the built environment of micro-areas changed as a result of meso-scale structural influences. Such changes were seen as one component of the complex context to which individuals responded when making residential decisions. A more

detailed examination of agency action was conducted using population turnover analysis. This allowed the spatial effects of migration to be assessed at the micro-level and, at the same time, provided a link between the agency action and the structural changes at this level. Population turnover in selected enumeration districts was examined and a picture was built up of the impacts of migration decisions on the social composition of small areas and, thus, on the meso-scale pattern of socio-spatial polarisation.

The first task of the analysis was to establish the nature of socio-spatial change in late nineteenth century Edinburgh and Perth. This can be summarised as an increase in social and spatial segregation, with the main social groups being more spatially polarised by the closing decade of the century. Social status group distribution maps and population density maps, constructed from census data, demonstrated the spatial outcome of the major processes outlined in figure 7.0. Further, whether measured against a theoretically even distribution of social groups across the city or in terms of the exposure of one social group to others (Massey and Denton, 1988), residential differentiation was shown to have increased markedly over the period. Although this finding was as expected, the fact that it was occurring in the much smaller and less industrialised burgh of Perth, as well as in Edinburgh, suggests that similar socio-economic and spatial processes were influencing settlement structure at many different levels in the urban hierarchy.

The second task of analysis was to advance the understanding of socio-spatial change by examining the details of processes operating in both of the case-study burghs. These processes were viewed in terms of the modalities between the socio-economic structures and the actions of individual agents. As such, attention was focused on the ways in which class distinction arose through a combination of the advent of consumerism, but also the operations of the housing market. Evidence from newspapers and from the Report to the Royal Commission revealed that the housing market in both Edinburgh and Perth was increasingly sub-divided mirroring the

emerging social differentiation of society. This differentiation process, through intra-urban migration, became a spatial process as well, explaining the high levels of socio-spatial polarisation experienced in both burghs by the end of the century. The fact that these processes were occurring in Perth as dynamically as in Edinburgh suggests that the size of the settlement was not the main influence of change, but that the factors, or mediators, driving the processes were. These mediators represent the interaction between socio-economic structures and human agents, and were the proximate determinants of socio-spatial change. This research thus suggests that the understanding of socio-spatial change involves a much more complex set of interrelationships than has hitherto been thought.

This chapter, thus far, has summarised the research findings of this thesis in an attempt to address the specific research questions and aims. However, a number of limitations were encountered which restricted the scope of analysis. Thus, attention must now focus on what this thesis could not address and, in so doing, the ways in which this research can lead to future research projects.

One of the most challenging aspects of the structuration grid in chapter one concerns the idea of 'structured feeling' - a term first employed by Pred (1983) as he tried to encapsulate the ways in which an individual's feelings and perceptions can be 'structured'. Structured feeling is represented as a modality in the same way mobility is. However, whereas investigating mobility using turnover analysis, is relatively straightforward given the availability of data sources, an empirical exploration of structured feeling is not. Structured feeling represents the mechanism that links the place of an individual within society to the way he or she behaves according to that place. This behaviour, Pred (1983) argues, is in terms of the structured feeling of an individual - the on-going 'biography' of an individual. Structured feeling, therefore, must be seen as a social dynamic in the same way as mobility. An agents' values, aspirations and life-history embody this dynamic. However, the difficulty with this lies in the fact that evidence of the details of agents' 'biographies' is frequently impossible

to obtain. Certainly, a few diaries or personal accounts exist, but they generally belong to individuals from higher status social groups. No data sources can be found which provide an adequate understanding of the motives, aspirations and feelings of individuals from all social groups. As a result, the analysis of structured feeling in this thesis has relied on indirect evidence, drawing inferences from solidaristic behaviour. Thus, actions of individuals *within defined groups* have been examined and the spatial impact of these actions has been assessed. From this, conclusions were drawn regarding motivations. However, this underplays the significance of the effects of individual agent's decision making, since it, of necessity, treats individuals as members of particular social groups. Consequently, a whole series of research questions regarding structured feeling and the way this interacts with the other components of the structuration grid could not be addressed in this thesis. Only a general account of motivation in the context of residential mobility was possible and this cannot fully compensate for the paucity of detailed research into individual 'biographies'.

A second and related aspect of what is missing from this thesis concerns social interaction. The ways in which agents 'communicate' have been viewed largely spatially. Data from sources such as the Royal Commission's Report indicates that social classes were increasingly polarised socially over time, but the analysis of this thesis has tended to concentrate more on the spatial implications of this rather than the sociological. This is in line with research concerned with spatial patterns but it misses the 'structured feeling' of social interaction. In other words, the experiences of agents socially interacting cannot adequately be ascertained, and this is important because the 'structured feeling' of agents may well have been influential in residential decision making and ultimately socio-spatial change. This point also serves to highlight the inter-relatedness of the components of the structuration grid.

In the analysis of migration, attention was paid to intra-urban migration rather than in-migration from outside burghs, although the later would have been included in the

turnover analysis. Nevertheless, detailed analysis of the effects of in-migration is missing. The impact of in-migration to Edinburgh and Perth would have been profound both socially and spatially, although generally, this form of migration was less important after 1851 than before (see Jones, 1990). However, since population turnover was the means whereby the spatial effects of migration were analysed the lack of specific attention to in-migration is perhaps a less serious limitation than it might at first appear. Further research could profitably extend the analysis by examining differences in the residential mobility of the native population and the in-migrants.

Population turnover rather than persistence was adopted for the analysis of mobility in chapter six. Although the two are closely linked, the former is more pertinent to a study of residential change and dynamism than is the latter which gives a suggestion of stability rather than dynamism. For this reason, along with the availability of reasonably reliable population turnover data, population turnover of streets or EDs was chosen. Household turnover was not specifically examined because interest lay in interpreting broad spatial patterns. In a study of social trends rather than spatial impacts, household turnover would undoubtedly be more pertinent. Nevertheless, the importance of the social impacts of mobility must not be too lightly separated from the spatial impacts simply because, as the structuration grid in chapter one makes clear, that the two were increasingly becoming difficult to separate.

A further limitation of the research presented in this thesis lies in the fact that only the housing market was used to examine the domination of allocation and authority of capitalism. As this is an urban socio-spatial study, and given that the housing stock made up the largest single component of urban space, the operations of the housing market were taken as an example of the processes involved in the consolidation of capitalism. In reality there were other examples that could have ben considered. For instance, capital flows associated with industrial investment also changed the physical fabric of the city, thus affecting both mobility and structured feeling. Generally,

however, the operations of the housing market was the dominant 'capitalist factor' influencing residential socio-spatial change, although it cannot be denied that at times the housing market responded to industrial imperatives. The new housing built in Edinburgh's Fountainbridge, for example, was the result of new industry located there. Again, this is an area which is worthy of further research.

Overall, the restrictions imposed by available data combined with time constraints has meant that not all aspects of the conceptual framework presented in chapter one have been explored in depth. Yet, the insights provided by structuration theory have guided the empirical research and, importantly, could be used to extend the findings of this work in the future. By recognising the importance of both socio-economic structures and human agency, this thesis attempts to sketch a more holistic view of urban change than is evident in previous research. At the same time, its empirical analysis contributes to the understanding of the dynamics of socio-space in the late Victorian city on which other research can build. The next section of this chapter suggests ways in which this might be done.

In terms of the detail of residential mobility, one of the most important considerations for future research would be to give greater prominence to the role of two groups of people currently understudied in historical spatial studies - women and lodgers. The reason women were ignored in much of the analysis has already been rehearsed elsewhere in the thesis. Nevertheless, it may be possible to find ways of investigating the role women played in residential decision making. Evidence presented in chapter five indicated that advertisers were aiming products at middle class women in an increasingly commercial age; there is no reason to suppose that this could not be extended to the choice of residence as well as the furniture and appliances within. Moreover, data sources such as the census and valuation rolls provide information on women who *were* heads of households. These could be used to examine the mobility of this group in comparison to, say, male heads of households of similar composition or social status.

The position of lodgers is rather different. The presence of lodgers within a household is generally considered to be a sign of lower status, since the implication is that the household needed to supplement its income. Nevertheless, renting lodgings was clearly a common occurrence in the late nineteenth century. In Edinburgh, lodgers are recorded as living in one roomed tenement apartments in the Old Town, and in all but the highest status EDs, and even here there were examples of lodging houses. Perth, generally, had fewer lodgers than Edinburgh. Lodgers may not have been of the same social group as their landlord or landlady, and their actions as agents may have also differed accordingly, particularly in terms of mobility. Further, as a group, they were likely to be more mobile because of the nature of their accommodation, and probably younger. However, as lodgers were not heads of 'households' they were excluded from the analysis of migration and social status group composition and this is likely to have resulted in an underestimation of the true levels of mobility. To include lodgers as a separate 'household' may be one way of resolving this problem, although tracing the residential moves of individual lodgers would be difficult, if not impossible. The key questions for future research into socio-spatial change must be the extent to which the mobility of lodgers responded to increasing class consciousness and whether or not the presence of lodgers in an area influenced more general perceptions of its social status.

Future research could also usefully devote more attention to micro-scale processes. In the present work only the spatial processes of migration were given prominence. This meant that detailed analysis of capital flows and its effects on an area were accorded only cursory consideration. As a result some of the details behind the ways in which areas changed were missed, although some attention was paid to the ways in which structural changes affected small areas within Edinburgh and Perth. Nevertheless, an examination of capital flows to areas could provide additional information on the influences of agency decision making. Suburbanisation and downgrading could be highlighted, for instance, which could shed further light on the ways certain area characteristics affected agents' aspirations, values and ultimately actions.

Further with regard to future research, the use of more than four social status groups could perhaps provide greater insight into the nuances of social differentiation especially in the most socially differentiated city in Scotland - Edinburgh. Heiton (1861) identified nineteen 'castes' within Edinburgh. Although these were the perceptions of an upper middle class professional, this does serve to illustrate a greater diversity of society than the four social status groups used in this thesis could portray. Thus, socio-spatial polarisation was probably more complex than this research has indicated. Moreover, the subtleties of social division appear to have included social cleavages between quite narrowly defined occupational groups. For instance, Stother (1993) discovered that, in Glasgow in the later nineteenth century, certain professional groups were spatially differentiated from others. Thus, there was a spatial clustering of medics and of lawyers. Indeed, Heiton (1861), stresses the importance of the Edinburgh occupational hierarchy as an unofficial urban pecking order, but more than this, even within occupational groups there were strictly defined hierarchies, and none more so than amongst the professions, especially law. So were the hierarchies within the professions also expressed spatially? and were some trades regarded as more socially respectable than others? These and related questions remain to be answered.

Residential segregation of particular occupational groups is one aspect of study that could be advanced. Where were occupational groups settling? and why were they doing so? Was their choice of residence related to their perceived social status? Did the housing market influence their choice? By expanding the four-tiered social status typology to include many other tiers, a more detailed picture could emerge. Some research has attempted this (Warnes 1973), but more research is needed.

There are two main advantages of carrying out socio-spatial research using a more detailed typology. The first is that, by including more social groups, means that a more detailed sense of structured feeling could be incorporated into the understanding of residential mobility. Economic motivations alone are unlikely to explain why certain

occupations clustered. Thus, by examining the mobility patterns of, say, doctors or printers, additional insights may emerge which reveal more of the behavioural impulses and the mechanisms of structure / agency interaction. Second, and perhaps more difficult to justify, is that a more detailed social typology may allow a greater understanding of the role of women. Married women would not be classed simply as, say, 'lower-non manual wives', but as 'butchers' wives' and so on. This still defines the social status of women according to the occupation of their husbands and thus undervalues their position in society, but it may prove possible to discern their involvement in residential decisions if the outcome of these decisions is examined for smaller social groups. This is possibly one avenue by which the understanding of the understanding of the role Victorian women in influencing spatial change might be advanced. In the same way, the influences of ethnicity, migrant status and age on residential mobility could be explored by investigating the spatial moves of these groups and, where possible, their differing motivations. This would shed further light into socio-spatial change, and enhance what is known about the role of biography in the study of place.

More generally, the role of 'biography' is in need of further research. In chapter one it was stated that an understanding of individual biography is essential in the study of place. This claim was based on Pred's (1983) assertion that biography is a principal factor in residential decision making as it includes more than just life-story, but also outlook and aspirations. It is therefore related to structured feeling. Further research needs to explore structured feeling as the mechanism through which place and 'moral' interaction are related. What was causing individuals to sanction their behaviour in the way they did? The structuration grid suggests that it was their 'place' as they perceived it themselves, or as it was perceived by the wider society. The ideas of deference, superiority and indifference that may have existed to sanction an agent's moral interaction were closely connected to their perceived place within society. Values, aspirations and structured feeling were the means by which this 'place' and the 'sanctioned' action interacted. The relationships between these factors remain under-

researched, mainly because of the lack of extant data sources. Similarly, the concept of legitimation and its role in socio-spatial analysis could not be given the attention it deserves in this thesis and a fuller investigation must be left to future research.

Finally, more research is needed on capitalism and both economic and political interactions within the housing market. The role played by local government, for example, was only mentioned briefly and a much more comprehensive account could be constructed using minute books and other such sources. The influences legislation or local bye-laws had on the housing market can be considerable. For instance, the slum clearance orders or town improvement acts, would mean a significant turnover of housing stock as new housing would need to be built to replace the old. What were the knock-on effects of these political influences and what were the socio-spatial consequences? Furthermore, research is needed into the way institutions controlled certain aspects of housing, particularly in terms of allocation. This may shed light on power relationships in the nineteenth century and further the understanding of socio-spatial change.

In sum, the research presented above has sought to build upon past work - both theoretical and empirical - but much remains to be done. The thesis has, however, made its own original, if modest, contribution to geographical enquiry into the Victorian city. The concluding paragraphs in this thesis reflect upon the nature of this contribution.

There exist, to date, numerous studies concerned with the examination or explanation of urban socio-space (see chapter two). Individually, each study of urban space tends to focus on a different aspect of that space; perhaps its form, the dynamics or its genesis. Thus, as chapter two made clear, previous research lacks an integrated explanation for why nineteenth century cities took the spatial form they did. This thesis sought to provide a more comprehensive and integrated view of the spatial impacts of industrialisation. To this end the research was a success as analysis focused equally on

both structures and agency at three scales to reveal that socio-spatial change was the outcome of the complex relationships between the socio-economic structures and the action of human agents, and where it was not possible to fully investigate all of the relationships, this research has, at least, prompted research questions in these areas which can deepen the enquiry further.

Although the insights of structuration theory hold out the promise of recognising the reflexive nature of the relationship between structure and agency, translating Giddens abstract ideas into a framework for empirical analysis is less than straightforward, as Giddens' critics have recognised (Gregson, 1988). This thesis attempted one such translation within the structuration grid by identifying those aspects of more abstract ideas which could be investigated empirically. For example, mobility was considered as the modality by which social interaction could be examined within the class structure, or similarly by examining economic and political interaction using the housing market within capitalism.

Further, the term modality was used to denote a link between the level of structures and the level of individual actions. In this research modalities were made more concrete by being identified with mobility, structured feeling and the housing market. These are seen as elements in a complex web of inter-relationships but each is capable of being investigated empirically. Moreover, the recognition that macro-structures operate at a different 'level' to the experiences of individuals but that the two are related via modalities, when contextually applied, encourages empirical analysis at three geographical scales. Yet the structuration grid does not map neatly onto the matrix of the main relationships examined (figure 7.0). Although the links and relationships in both the grid (figure 1.0) and the matrix (figure 7.0) illustrate the dynamic processes resulting in socio-spatial change, and that the inter-relatedness of the components of the structuration grid are reflected in the matrix as processes operating at three scales (capitalism as the context, the housing market as the focus, and economic and political interactions of agents as the components of change), there

still remains some lack of clarity, for instance the relationship between mobility as a modality and social interaction and where this fits in the relationship matrix. This remains to be fully understood. Nevertheless, as far as it is known, no other study of Victorian cities employs three scales of enquiry in the way this research does, and it is possible to see this thesis as pointing to a research direction which others might fruitfully follow, albeit that the path has yet to be fully illuminated.

Empirically, this research adds to the mounting evidence of progressive socio-spatial segregation in urban centres after 1850. It has not only established that social polarisation was happening in large cities whose economies were not dominated by manufacturing (Edinburgh) but that much smaller burghs, with very limited industrialisation (Perth), experienced similar changes. It thus extends existing knowledge of the geography of nineteenth century cities by demonstrating that the processes which were influencing the socio-spatial forms of the likes of Liverpool or Leeds were also causing change in different sorts of settlements north of the border. By examining these processes at three different scales, and emphasising the inter-related roles of both structures and agents, the thesis has promoted the idea that even the most abstract of theories can provide valuable insights for empirical study. In so doing this thesis has prompted a number of further research questions which set, it is hoped, new challenges for a future research agenda.

APPENDICES

APPENDIX A: Population

1) The Scottish urban hierarchy at the time of the First Statistical Account, 1791.

Rank	SETTLEMENT	POPULATION	Rank 1851	Rank 1891
1	EDINBURGH	81,286	2	1
2	GLASGOW	64,763	1	2
3	DUNDEE	22,500	3	3
4	ABERDEEN	20,067	4	4
5	PAISLEY	19,903	5	5
6	PERTH	19,500	8	11
7	GREENOCK	15,000	6	7
8	LEITH	13,241	7	6
9	DUMFRIES	6,902	14	24
10	KILMARNOCK	5,670	9	12
11	AYR	5,560	20	38
12	MONTROSE	5,194	11	29
13	DUNFERMLINE	5,192	13	16
14	ARBROATH	5,183	10	15
15	INVERNESS	5,107	16	17
16	STIRLING	5,000	15	23
17	CAMPBELLTOWN	5,000	30	50
18	KIRKCALDY	4,267	17	13
19	DALKEITH	4,100	48	44
20	PORT GLASGOW	4,036	29	26

Source: The Statistical Account of Scotland 1791-1799 edited by Sir John Sinclair: Volume One

2) Population of the burghs, 1851, 1891

	1851	1891
GLASGOW	329,097	576,779
EDINBURGH	160,302	261,225
DUNDEE	78,931	153,330
ABERDEEN	71,973	110,162
PAISLEY	47,952	66,418
LEITH	30,919	65,205
GREENOCK	36,689	63,096
GOVAN	3,131	61,363
PARTICK	6,112	36,568
AIRDRIE	14,485	30,064
COATBRIDGE	8,564	30,034
PERTH	23,835	29,899
KILMARNOCK	19,201	28,447
KIRKCALDY	10,475	27,151
HAMILTON	9,630	24,859
ARBROATH	16,986	22,987
DUNFERMLINE	13,836	22,157
INVERNESS	12,793	19,215
HAWICK	6,683	19,204
MOTHERWELL	802	18,726
FALKIRK	8,752	17,312
GALASHIELS	5,918	17,252
STIRLING	12,837	16,974
DUMFRIES	13,166	16,675
WISHAW	3,373	15,252
PORT GLASGOW	6,986	14,626
DUMBARTON	4,590	14,046
RUTHERGLEN	6,514	13,364
MONTROSE	15,238	12,885
FORFAR	9,311	12,769
PETERHEAD	7,298	12,195
MUSSELBURGH	7,092	12,106
BARRHEAD	6,069	11,274
ALLOA	6,676	10,711
POLLOKSHAWS	6,086	10,288
PORTOBELLO	3,497	10,220
JOHNSTONE	5,872	9,668

AYR	9,115	9,512
KIRKINTILLOCH	6,342	9,310
GIRVAN	7,319	9,075
ROTHESAY	7,104	9,034
ELGIN	6,337	7,646
STRATHAVEN	4,274	7,110
DALKEITH	5,086	6,952
ST ANDREWS	5,107	6,853
RENFREW	2,722	6,254
SALTCOATS	4,338	5,895
SELKIRK	3,314	5,788
LANARK	5,304	5,537
CAMPBELTOWN	6,880	5,479
BRECHIN	6,637	5,139
OBAN	1,742	4,902
ANNAN	3,426	4,860
CUPAR	5,686	4,693
BURNTISLAND	2,329	4,692
NAIRN	3,401	4,640
IRVINE	7,534	4,556
KEITH	4,012	4,268
KELSO	4,783	4,184
CULLEN	1,697	3,985
FORRES	3,468	3,971
THURSO	2,908	3,936
LINLITHGOW	4,213	3,918
BANFF	6,000	3,871
HADDINGTON	3,883	3,771
DUNBAR	2,965	3,554
STRANRAER	5,738	3,136
PEEBLES	1,982	3,059
DYSART	8,041	3,022
WICK	6,722	2,962
INVERURIE	2,084	2,625
KILRENNY	1,862	2,565
KIRKWALL	3,451	2,557
KIRKCUDBRIGHT	2,778	2,531
JEDBURGH	2,948	2,455
INVERBERVIE	878	2,391
DINGWALL	1,990	2,290

TAIN	2,588	2,080
BLAIRGOWIE	1,369	2,066
PITTENWEEM	1,450	1,991
KINGHORN	1,377	1,569
COUPAR ANGUS	1,269	1,562
ANSTRUTHER	1,526	1,541
WIGTOWN	2,232	1,509
NEWBURGH	2,638	1,506
KIRRIEMUIR	969	1,411
WHITHORN	1,652	1,403
LOCHMABEN	1,092	1,366
INVERKEITHING	1,497	1,354
NORTH BERWICK	498	1,324
SANQUHAR	1,884	1,241
CROMARTY	1,988	1,217
AYLTH	859	1,125
CRAIL	1,247	1,113
FORTROSE	1,148	980
FALKLAND	1,330	959
INVERARY	1,164	816
QUEENSFERRY	720	768
LAUDER	1,105	763
KINTORE	476	686
AUCHTERMUCHTY	673	665
DORNOCH	599	514
CULROSS	605	380
NEW GALLOWAY	447	374
EARLSFERRY	436	304

SOURCE: Census summary tables, 1851, 1891.

APPENDIX B: Occupation Classification

The following is a list of occupations stated in the censuses of Perth and Edinburgh and which have been classified into four broad social classes.

UPPER NON-MANUAL

Sheriff
Schoolmaster /teacher/governess
Lawyer /attorney /solicitor/notary
Army Officer
Naval Officer
Cleric /Priest /Minister/Missionary/Religious
HM Inspector of Taxes
Tax Collector
City Chamberlain
General Practitioner
Civil or Government servant
Adjutant
Diplomat
Banker /bank Manager
Dentist/dental surgeon
Surgeon
Druggist/chemist/apothecary
Lecturer
Architect
Inspector of Works/Factories/Cleansing
Gentleman
Accountant
Magistrate
Inspector of Fisheries
Messenger at Arms
Veterinary Surgeon
Land Surveyor/Valuer
Librarian
City Treasurer
Optician
Ship Owner
Inspector of Weights and Measures
Inspector of Grain
Land Owner
Lady of Means
Publisher
Linen Cloth Inspector
Road Surveyor / Inspector
Farm Owner
Wagon Inspector
Professor
Museum Curator
Prison Governor

Police Superintendent/Inspector
Burgh Assessor
HM Inspector of Schools
Procurator Fiscal
Rupture Specialist

LOWER NON MANUAL

Proprietor/proprietrix/landlord/lady
Pawnbroker
Agent (all sorts)
Railway Inspector/Superintendent
Merchant
Lapidary
Clerk
Chelsea/Greenwich Pensioner
Musician
Vintner/spirit dealer
Innkeeper/hostler
(Sick)Nurse
Writer
Tobacconist
Grocer/Shopkeeper
Land agent
Coffee house keeper
Manager (unspecified)
China dealer
Warder
Non Commissioned Officer
Superintendent of Baths
Foreman
Fund holder
Journalist
Bank teller
Housekeeper
Meal dealer
Farm Owner
Bookseller
Collector (of dues)
Auctioneer
Policeman
Grocer's/shop assistant
Cattle Dealer
Guild Officer
Silk Mercer
Publican
Jeweller
Eating house keeper
Sheriff's Officer
Stationer
Broker

Salesman
Ship's Master
Superintendent of the Graveyard
Butler
Midwife
Newsagent
Dealer (unspecified)
Victualer
Postmaster/mistress
Perfumer
Town Sergeant
Golf Society keeper
Railway official
Vendor (unspecified)
Portrait Painter
Railway/road contractor
Harbour Master
Travel Agent
Annuitant /Lives off interest/land etc.
Office Runner / Messenger
Landscape painter
Photographer
Collector of Poor rates
Time Keeper
Biblewoman
Bugler
Commercial Traveller
Sexton
Scripture Reader
Station Master
Detective
Assistant Inspector
Bookkeeper
Herbalist
Piano tuner
Club Master/steward
Draughtsman
Jute Broker
Canvasser
Designer
Cashier
Horse Trainer
Examiner
Restaurateur
Land Steward
Undertaker
Factor
Boat Hirer

SKILLED MANUAL

Engine Driver
Wright
Joiner
Mason
Shoemaker/cobbler
Bootmaker
Dressmaker
Embroiderer
Coachwright
Bookmaker/binder
Carpenter
Cabinet Maker
Gunsmith
Handloom weaver
Weaver
Engineer
Caster
Blacksmith
Tailor
Cooper
Flesher/butcher/poulterer
Brass-founder
Paver
Milliner /hatter
Cook
Baker
Fireman
Draper
Printer/compositor
Millwright
Patternmaker
Golf ball maker
Stockinger
Confectioner
(Iron)Moulder
Horsebreaker
Roper
Plumber
Watchmaker
Plasterer
Brewer
Goldsmith
Engine Fitter
Cordwainer
Builder
French Polisher
Framer
Saddler
Miller

Brace maker
Lamp maker
Wood turner
Shipwright
Painter
Nailer/nail maker
Seaman/sailor
(Foot)Soldier
Slater
Ink maker
Candle maker/chandler
Soda-water maker
Coach trimmer
Glover
Purifier of Gas
Coppersmith
Glassblower/founder
Marble cutter/sculptor
Saw-maker
Boilermaker
Upholsterer
Hosier
Glazier
Haberdasher
Iron founder
Sail maker
Clothier
Bell hanger
Fishing rod maker
Brush maker
Cutler
Horsehair manufacturer
Whitesmith (tinsmith)
Blacking Manufacturer (?)
Last maker
Bobbin turner
Bagpipe maker
Housewife
Looking glass maker
Umbrella maker
Lithographer
Master (?)
Ginger beer maker
Gamer/gamedealer
Plane maker
Zinc-worker
Silversmith
Mat maker
Comb maker
Basketmaker/weaver
Cartwright

Engraver
Heddle builder (?)
Tweed manufacturer
Lather
Farrier
Wheelwright
Tallow chandler
Mechanic
Potter
Master Mariner
Iron turner
Golf club maker
Tenter
Platelayer
Sewing machine maker
Springer/ spring maker
Pipemaker
Compositor
Distiller
Tool maker
Shirt maker
Birdcage maker
Organ Builder
Taxidermist
Decorator
Umbrella mender
Aerated water manufacturer

UNSKILLED MANUAL

Carter
Sawyer
Gardener
Labourer
Laundress/mangler/washerwoman
Watchman
Fisher
Railwayman/labourer/servant
Farmer
Porter
Coalman
Signalman
Guard (rail)
Pointsman
Toll Keeper
Hospital servant
Tacksman
Groom
Forester
Farm servant
Cattle driver

Agricultural labourer
Servant
C(o)urrier
Malster
Pauper
Warehouse/storeman
Tanner
Dyer
Winder (cotton)
Cleaner
Dairyman/maid
Cowherd/feeder
Quarryman
Barrowman
Drayman
Scavenger
Cotton warper
Jack-worker
Streetporter
Ploughman
Hawker
Boatman
Haymaker
Brickmaker
Flax spinner/dresser
Coalporter
Hammerman
Grainheaver
Rope spinner
Lamplighter
Silk twister
Stoker
Cloth darner
Searer
Cork cutter
Chimney sweep
Blockmaker
Coachman
Haircutter/dresser
Cabman
Mill labourer
Laing
Hemp dresser
Fishmonger
Ironmonger
Coach guard
Bargeman
Rag & bone man
Bricklayer
Strapper
Beggar/vagabond

Ostler
Reedmaker
Boot cleaner
Trawlerman
Mail guard
Needlewoman/sewer
Nurseryman
Plaidsman
Waiter
Postillion
Wireworker
Bonegetter
Skinner
Wool Stapler
Stableman
Brick moulder
Gatekeeper
Sack sewer
Spinner
Gamekeeper
Twister
Fitter
Worker (unspecified)
Coalyard keeper
Coaltrimmer
Starcher
Paddler
Sackmaker
Rat-catcher
Ladies maid
Charwoman
Bleacher
Fish curer
Shepherd
Janitor
Bottler
Railway marshallman
Beamer
Card cutter
Railway/road surfaceman
Rag packer
Roadsweep
Brakesman
Wayman
Telegraphist
Rabbit catcher
Peddler
Watchman
Stonecutter
Boot closer
Presser / ironer

Bird stuffer
Docker
Steward
Sausage maker
Laundryman
Carpet Picker
Cabman
Liveryman
Hoistman
Barman
Hewer
Dry Cleaner
Loftsman
Cellarman
Bill Poster
Florist
Drainer
Meat Curer
Milkman
Van Driver

APPENDIX C: Calculations of the indices of segregation and dissimilarity for Perth

The index of segregation for the upper non-manual group (a)is calculated a-bcd% for the lower non-manual group (b) b-acd% etc. These are totalled for the whole city using each ED (A-BB)

The index of dissimilarity between upper and lower non-manual groups is calculated a-b, etc. These calculation are at the bottom of each table. Again for the city index each ED is added together.

1) 1851

SOCIAL GROUP	A	B	C	D	E	F	G	J
a (UNM)	11	8	18	3	5	0	7	13
a%	7.53	5.48	12.33	2.05	3.42	0	4.79	8.90
b (LNM)	22	34	80	48	31	5	17	81
b%	2.29	3.54	8.33	5	3.23	0.52	1.77	8.44
c (SM)	46	46	111	218	149	30	45	297
c%	2.30	2.30	5.55	10.89	7.45	1.50	2.25	14.84
d (SUM)	34	22	95	130	88	20	67	180
d%	3	1.62	6.99	9.57	6.48	1.47	4.93	13.25
bcd	102	102	286	396	268	55	129	558
bcd%	2.36	2.36	6.62	9.17	6.20	1.27	2.99	12.92
acd	91	76	224	351	242	50	119	490
acd%	2.60	2.17	6.39	10.01	6.90	1.43	3.39	13.98
abd	67	64	193	181	124	25	91	274
abd%	2.72	2.60	7.83	7.34	5.03	1.01	3.69	11.12
abc	79	88	209	269	185	35	69	391
abc%	2.54	2.83	6.73	8.66	5.95	1.13	2.22	12.58
a - bcd%	5.17	3.12	5.71	-7.11	-2.78	-1.27	1.81	-4.01
b - acd%	-0.30	1.37	1.94	-5.01	-3.67	-0.91	-1.62	-5.54
c - abd%	-0.42	-0.30	-2.28	3.55	2.42	0.49	-1.44	3.73
d - abc%	0.46	-1.21	0.26	0.91	0.52	0.35	2.71	0.66
a-b	5.24	1.94	4	-2.95	0.20	-0.52	3.02	0.47
a-c	5.24	3.18	6.78	-8.84	-4.02	-1.50	2.55	-5.94
a-d	4.53	3.86	5.34	-7.51	-3.05	-1.47	-0.14	-4.34
b-c	-0	1.24	2.79	-5.89	-4.22	-0.98	-0.48	-6.41
b-d	-0.71	1.92	1.34	-4.57	-3.25	-0.95	-3.16	-4.81
c-d	-0.70	0.68	-1.44	1.33	0.97	0.03	-2.68	1.60

K	L	M	N	O	P	Q	R	S		
11	1	6	4	11	3	10	6	2		
7.53	0.68	4.11	2.74	7.53	2.05	6.85	4.11	1.37		
37	42	23	46	33	27	57	42	17		
3.85	4.38	2.40	4.79	3.44	2.81	5.94	4.38	1.77		
46	111	28	59	20	38	77	52	30		
2.30	5.55	1.40	2.95	1	1.90	3.85	2.60	1.50		
33	83	15	52	16	23	50	26	18		
2.43	6.11	1.10	3.83	1.18	1.69	3.68	1.91	1.32		
116	236	66	157	69	88	184	120	65		
2.69	5.46	1.53	3.63	1.60	2.04	4.26	2.78	1.50		
90	195	49	115	47	64	137	84	50		
2.57	5.56	1.40	3.28	1.34	1.83	3.91	2.40	1.43		
81	126	44	102	60	53	117	74	37		
3.29	5.11	1.78	4.14	2.43	2.15	4.75	3	1.50		
94	154	57	109	64	68	144	100	49		
3.03	4.96	1.83	3.51	2.06	2.19	4.63	3.22	1.58		
4.85	-4.78	2.58	-0.89	5.94	0.02	2.59	1.33	-0.13		
1.29	-1.19	1	1.51	2.10	0.99	2.03	1.98	0.34		
-0.99	0.44	-0.39	-1.19	-1.43	-0.25	-0.90	-0.40	-0		
-0.60	1.15	-0.73	0.32	-0.88	-0.50	-0.96	-1.31	-0.25		
3.68	-3.69	1.71	-2.05	4.10	-0.76	0.91	-0.27	-0.40		
5.24	-4.86	2.71	-0.21	6.53	0.16	3	1.51	-0.13		
5.11	-5.42	3.01	-1.09	6.36	0.36	3.17	2.20	0.05		
1.56	-1.17	1	1.84	2.44	0.91	2.09	1.78	0.27		
1.43	-1.73	1.29	0.97	2.26	1.12	2.26	2.46	0.45		
-0.13	-0.56	0.30	-0.88	-0.18	0.21	0.17	0.69	0.17		

T	U	V	W	X	Y	Z	AA	TOTAL	
1	1	4	6	8	3	2	2	146	
0.68	0.68	2.74	4.11	5.48	2.05	1.37	1.37		
62	41	32	32	50	29	34	38	960	
6.46	4.27	3.33	3.33	5.21	3.02	3.54	3.96		
139	92	101	63	50	45	49	59	2001	
6.95	4.60	5.05	3.15	2.50	2.25	2.45	2.95		
104	76	54	39	28	24	36	46	1359	
7.65	5.59	3.97	2.87	2.06	1.77	2.65	3.38		
305	209	187	134	128	98	119	143.0	4320	
7.06	4.84	4.33	3.10	2.96	2.27	2.75	3.31		
244	169	159	108	86	72	87	107.0	3506	
6.96	4.82	4.54	3.08	2.45	2.05	2.48	3.05		
167	118	90	77	86	56	72	86	2465	
6.77	4.79	3.65	3.12	3.49	2.27	2.92	3.49		
202	134	137	101	108	77	85.0	99.0	3107	
6.50	4.31	4.41	3.25	3.48	2.48	2.74	3.19		
-6.38	-4.15	-1.59	1.01	2.52	-0.21	-1.38	-1.94	73	36.64
-0.50	-0.55	-1.20	0.25	2.76	0.97	1.06	0.91	41	20.50
0.17	-0.19	1.40	0.02	-0.99	-0.02	-0.47	-0.54	24	12.21
1.15	1.28	-0.44	-0.38	-1.42	-0.71	0.01	0.20	19	9.69
-5.77	-3.59	-0.59	0.78	0.27	-0.97	-2.17	-2.59	53	26.32
-6.26	-3.91	-2.31	0.96	2.98	-0.19	-1.08	-1.58	82	40.84
-6.97	-4.91	-1.23	1.24	3.42	0.29	-1.28	-2.01	78	39.18
-0.49	-0.33	-1.71	0.18	2.71	0.77	1.09	1.01	43	21.69
-1.19	-1.32	-0.64	0.46	3.15	1.25	0.89	0.57	44	22.08
-0.71	-0.99	1.07	0.28	0.44	0.48	-0.20	-0.44	17	8.67

2) 1871

SOCIAL GROUP	A	B	C	D	E	F	G	H
a (UNM)	10	7	17	2	4	2	35	3
a%	5.88	4.12	10	1.18	2.35	1.18	20.59	1.76
b (LNM)	24	64	140	42	25	17	68	9
b%	2.17	5.78	12.65	3.79	2.26	1.54	6.14	0.81
c (SM)	41	64	117	111	128	57	99	7
c%	2.21	3.45	6.30	5.98	6.90	3.07	5.33	0.38
d (SUM)	40	34	83	121	70	67	67	14
d%	3	2.05	5	7.28	4.21	4.03	4.03	0.84
bcd	105	162	340	274	223	141	234	30
bcd%	2.27	3.50	7.35	5.93	4.82	3.05	5.06	0.65
acd	91	105	217	234	202	126	201	24
acd%	2.47	2.85	5.89	6.35	5.48	3.42	5.45	0.65
abd	74	105	240	165	99	86	170	26
abd%	2.52	3.57	8.17	5.62	3.37	2.93	5.79	0.88
abc	75	135	274	155	157	76	202	19
abc%	2.39	4.31	8.75	4.95	5.01	2.43	6.45	0.61
a - bcd%	3.61	0.61	2.65	-4.75	-2.47	-1.87	15.53	1.12
b - acd%	-0.30	2.93	6.76	-2.55	-3.22	-1.88	0.69	0.16
c - abd%	-0.31	-0.13	-1.86	0.36	3.53	0.14	-0.45	-0.51
d - abc%	0.61	-2.26	-3.75	2.34	-0.80	1.61	-2.41	0.24
a-b	3.71	-1.66	-2.65	-2.62	0.09	-0.36	14.45	0.95
a-c	3.67	0.67	3.70	-4.80	-4.54	-1.89	15.25	1.39
a-d	2.88	2.07	5	-6.11	-1.86	-2.86	16.55	0.92
b-c	-0.04	2.33	6.34	-2.19	-4.64	-1.54	0.81	0.44
b-d	-0.83	3.73	7.65	-3.49	-1.96	-2.50	2.11	-0.03
c-d	-0.79	1.40	1.31	-1.30	2.68	-0.96	1.30	-0.47

J	K	L	M	N	O	P	Q	R
4	9	1	21	3	9	1	5	5
2.35	5.29	0.59	12.35	1.76	5.29	0.59	2.94	2.94
121	58	23	56	55	59	32	37	66
10.93	5.24	2.08	5.06	4.97	5.33	2.89	3.34	5.96
229	67	50	55	107	35	42	82	59
12.34	3.61	2.69	2.96	5.77	1.89	2.26	4.42	3.18
198	79	87	20	113	13	27	41	41
11.92	4.76	5.24	1.20	6.80	0.78	1.63	2.47	2.47
548	204	160	131	275	107	101	160	166
11.85	4.41	3.46	2.83	5.95	2.31	2.18	3.46	3.59
431	155	138	96	223	57	70	128	105
11.69	4.20	3.74	2.60	6.05	1.55	1.90	3.47	2.85
323	146	111	97	171	81	60	83	112
10.99	4.97	3.78	3.30	5.82	2.76	2.04	2.83	3.81
354	134	74	132	165	103	75	124	130
11.30	4.28	2.36	4.21	5.27	3.29	2.39	3.96	4.15
-9.50	0.88	-2.87	9.52	-4.18	2.98	-1.60	-0.52	-0.65
-0.76	1.04	-1.67	2.45	-1.08	3.78	0.99	-0.13	3.11
1.34	-1.36	-1.08	-0.34	-0.06	-0.87	0.22	1.59	-0.63
0.62	0.48	2.88	-3.01	1.54	-2.50	-0.77	-1.49	-1.68
-8.58	0.05	-1.49	7.29	-3.20	-0.04	-2.30	-0.40	-3.02
-9.99	1.68	-2.11	9.39	-4	3.41	-1.67	-1.48	-0.24
-9.57	0.54	-4.65	11.15	-5.04	4.51	-1.04	0.47	0.47
-1.41	1.63	-0.62	2.10	-0.80	3.44	0.63	-1.08	2.78
-0.99	0.48	-3.16	3.85	-1.83	4.55	1.27	0.87	3.49
0.42	-1.15	-2.54	1.76	-1.04	1.10	0.64	1.95	0.71

S	T	U	V	W	X	Y	Z	AA	Total	
2	1	1	4	8	8	4	2	2	170	
1.18	0.59	0.59	2.35	4.71	4.71	2.35	1.18	1.18		
12	13	21	20	32	39	26	17	31	1107	
1.08	1.17	1.90	1.81	2.89	3.52	2.35	1.54	2.80		
70	49	51	104	43	29	51	58	51	1856	
3.77	2.64	2.75	5.60	2.32	1.56	2.75	3.13	2.75		
119	70	94	77	55	21	36	27	47	1661	
7.16	4.21	5.66	4.64	3.31	1.26	2.17	1.63	2.83		
201	132	166.	201	130	89	113	102	129	4624	
4.35	2.85	3.59	4.35	2.81	1.92	2.44	2.21	2.79		
191	120	146	185	106	58	91	87	100	3687	
5.18	3.25	3.96	5.02	2.87	1.57	2.47	2.36	2.71		
133	84	116	101	95	68	66	46	80	2938	
4.53	2.86	3.95	3.44	3.23	2.31	2.25	1.57	2.72		
84	63	73	128	83	76	81	77	84	3133	
2.68	2.01	2.33	4.09	2.65	2.43	2.59	2.46	2.68		
-3.17	-2.27	-3	-1.99	1.89	2.78	-0.09	-1.03	-1.61	83.14	41.6
-4.10	-2.08	-2.06	-3.21	0.02	1.95	-0.12	-0.82	0.09	47.95	24
-0.76	-0.22	-1.20	2.17	-0.92	-0.75	0.50	1.56	0.02	22.88	11.5
4.48	2.20	3.33	0.55	0.66	-1.16	-0.42	-0.83	0.15	42.77	21.38
0.09	-0.59	-1.31	0.55	1.82	1.18	0	-0.36	-1.62	60.38	30.19
-2.60	-2.05	-2.16	-3.25	2.39	3.14	-0.39	-1.95	-1.57	89.38	44.69
-5.99	-3.63	-5.07	-2.28	1.39	3.44	0.19	-0.45	-1.65	99.78	49.89
-2.69	-1.47	-0.85	-3.80	0.57	1.96	-0.40	-1.59	0.05	46.2	23.1
-6.08	-3.04	-3.76	-2.83	-0.42	2.26	0.18	-0.09	-0.03	61.48	30.74
-3.39	-1.57	-2.91	0.97	-0.99	0.30	0.58	1.50	-0.08	33.81	16.91

3) 1891

SOCIAL GROUP	A	B	C	D	E	F	G	H	J
a (UNM)	9	1	18	2	1	62	38	7	2
a%	4.07	0.45	8.14	0.90	0.45	28.05	17.19	3.17	0.90
b (LNM)	25	62	163	32	28	194	148	78	69
b%	1.72	4.27	11.23	2.21	1.93	13.37	10.20	5.38	4.76
c (SM)	34	32	84	75	137	97	74	37	236
c%	2.10	1.97	5.18	4.63	8.45	5.98	4.57	2.28	14.56
d (SUM)	39	22	106	195	144	140	28	21	281
d%	3	1.04	5.03	9.25	6.83	6.64	1.33	1	13.33
bcd	98	116	353	302	309	431	250	136	586
bcd%	1.89	2.24	6.81	5.83	5.97	8.32	4.83	2.63	11.31
acd	82	55	208	272	282	299	140	65	519
acd%	2.08	1.39	5.27	6.89	7.14	7.57	3.54	1.65	13.14
abd	73	85	287	229	173	396	214	106	352
abd%	1.93	2.25	7.59	6.06	4.58	10.48	5.66	2.80	9.31
abc	68	95	265	109	166	353	260	122	307
abc%	2.06	2.88	8.05	3.31	5.04	10.72	7.90	3.70	9.32
a - bcd%	2.18	-1.79	1.33	-4.93	-5.51	19.73	12.37	0.54	-10.41
b - acd%	-0.35	2.88	5.97	-4.68	-5.21	5.80	6.66	3.73	-8.38
c - abd%	0.17	-0.27	-2.41	-1.43	3.87	-4.49	-1.10	-0.52	5.25
d - abc%	0.94	-1.84	-3.02	5.94	1.79	-4.08	-6.57	-2.71	4.01
a-b	2.35	-3.82	-3.09	-1.30	-1.48	14.68	6.99	-2.21	-3.85
a-c	1.97	-1.52	2.96	-3.72	-8	22.07	12.63	0.88	-13.65
a-d	1.07	-0.59	3.12	-8.35	-6.38	21.41	15.87	2.17	-12.43
b-c	-0.37	2.30	6.05	-2.42	-6.52	7.39	5.63	3.09	-9.80
b-d	-1.28	3.23	6.21	-7.05	-4.90	6.73	8.87	4.38	-8.57
c-d	-0.90	0.93	0.15	-4.62	1.62	-0.66	3.24	1.29	1.23

K	L	M	N	O	P	Q	R	S	T
2	1	11	2	10	0	2	1	0	0
0.90	0.45	4.98	0.90	4.52	0	0.90	0.45	0	0
53	17	36	52	96	27	26	58	12	11
3.65	1.17	2.48	3.58	6.62	1.86	1.79	4	0.83	0.76
71	48	42	80	49	39	59	58	34	31
4.38	2.96	2.59	4.94	3.02	2.41	3.64	3.58	2.10	1.91
90	76	40	118	15	40	62	65	56	91
4.27	3.61	1.90	5.60	0.71	1.90	2.94	3.08	2.66	4.32
214	141	118	250	160	106	147	181	102	133
4.13	2.72	2.28	4.83	3.09	2.05	2.84	3.49	1.97	2.57
163	125	93	200	74	79	123	124	90	122
4.13	3.16	2.35	5.06	1.87	2	3.11	3.14	2.28	3.09
145	94	87	172	121	67	90	124	68	102
3.84	2.49	2.30	4.55	3.20	1.77	2.38	3.28	1.80	2.70
126	66	89	134	155	66	87	117	46	42
3.83	2	2.70	4.07	4.71	2	2.64	3.55	1.40	1.28
-3.23	-2.27	2.70	-3.92	1.44	-2.05	-1.93	-3.04	-1.97	-2.57
-0.47	-1.99	0.13	-1.48	4.74	-0.14	-1.32	0.86	-1.45	-2.33
0.54	0.47	0.29	0.38	-0.18	0.63	1.26	0.30	0.30	-0.79
0.44	1.60	-0.81	1.53	-4	-0.11	0.30	-0.47	1.26	3.04
-2.75	-0.72	2.50	-2.68	-2.09	-1.86	-0.89	-3.54	-0.83	-0.76
-3.48	-2.51	2.39	-4.03	1.50	-2.41	-2.73	-3.13	-2.10	-1.91
-3.36	-3.15	3.08	-4.69	3.81	-1.90	-2.04	-2.63	-2.66	-4.32
-0.73	-1.79	-0.11	-1.35	3.59	-0.55	-1.85	0.42	-1.27	-1.15
-0.62	-2.43	0.58	-2.01	5.90	-0.04	-1.15	0.91	-1.83	-3.56
0.11	-0.64	0.69	-0.66	2.31	0.51	0.70	0.49	-0.56	-2.40

U	V	W	X	Y	Z	AA	BB	TOTAL	
1	1	8	3	1	1	1	36	221	
0.45	0.45	3.62	1.36	0.45	0.45	0.45	16.29		
16	22	26	34	17	16	10	123	1451	
1.10	1.52	1.79	2.34	1.17	1.10	0.69	8.48		
33	69	27	41	34	46	30	24	1621	
2.04	4.26	1.67	2.53	2.10	2.84	1.85	1.48		
94	113	79	35	58	29	49	22	2108	
4.46	5.36	3.75	1.66	2.75	1.38	2.32	1.04		
143	204	132	110	109	91	89	169	5180	
2.76	3.94	2.55	2.12	2.10	1.76	1.72	3.26		
128	183	114	79	93	76	80	82	3950	
3.24	4.63	2.89	2	2.35	1.92	2.03	2.08		
111	136	113	72	76	46	60	181	3780	
2.94	3.60	2.99	1.90	2.01	1.22	1.59	4.79		
50	92	61	78	52	63	41	183	3293	
1.52	2.79	1.85	2.37	1.58	1.91	1.25	5.56		
-2.31	-3.49	1.07	-0.77	-1.65	-1.30	-1.27	13.03	108.80	54.40
-2.14	-3.12	-1.09	0.34	-1.18	-0.82	-1.34	6.40	75	37.50
-0.90	0.66	-1.32	0.62	0.09	1.62	0.26	-3.31	33.43	16.71
2.94	2.57	1.90	-0.71	1.17	-0.54	1.08	-4.51	59.88	29.94
-0.65	-1.06	1.83	-0.99	-0.72	-0.65	-0.24	7.81	72.34	36.17
-1.58	-3.80	1.95	-1.17	-1.64	-2.39	-1.40	14.81	122.33	61.16
-4.01	-4.91	-0.13	-0.30	-2.30	-0.92	-1.87	15.25	132.72	66.36
-0.93	-2.74	0.13	-0.19	-0.93	-1.74	-1.16	7	71.20	35.60
-3.36	-3.84	-1.96	0.68	-1.58	-0.27	-1.64	7.43	91.01	45.50
-2.42	-1.10	-2.08	0.87	-0.65	1.46	-0.47	0.44	33.20	16.60

APPENDIX D - Indices of Interaction and Isolation for Perth

1) 1851 Upper Non-manual

Key:

x = upper non-manual households in ED
X = total upper non-manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	11	146	0.075346	102	113	0.902654	0.068008
B	8	146	0.05479	102	110	0.927272	0.050809
C	18	146	0.123287	286	304	0.940789	0.115987
D	3	146	0.020547	396	399	0.992481	0.020393
E	5	146	0.034246	268	273	0.981684	0.033619
F	0	146	0	55	55	1	0
G	7	146	0.047945	129	136	0.948529	0.045477
J	13	146	0.089041	558	571	0.977232	0.087013
K	11	146	0.075342	116	127	0.913385	0.068816
L	1	146	0.006843	236	237	0.995780	0.006820
M	6	146	0.041095	66	72	0.916666	0.037671
N	4	146	0.027397	157	161	0.975155	0.026716
O	11	146	0.075342	69	80	0.8625	0.064982
P	3	146	0.020547	88	91	0.967032	0.019870
Q	10	146	0.068493	184	194	0.948453	0.064962
R	6	146	0.041095	120	126	0.952380	0.039138
S	2	146	0.013698	65	67	0.970149	0.013289
T	1	146	0.006849	305	306	0.996732	0.006826
U	1	146	0.006849	209	210	0.995238	0.006816
V	4	146	0.027397	187	191	0.979057	0.026823
W	6	146	0.041095	134	140	0.957142	0.039334
X	8	146	0.054794	128	136	0.941176	0.051571
Y	3	146	0.020547	98	101	0.970297	0.019937
Z	2	146	0.013698	119	121	0.983471	0.013472
AA	2	146	0.013698	143	145	0.986206	0.013509
						int	0.941871
						iso	0.058128

int = interaction index
iso = isolation index

2) 1851 Lower non-manual

Key:

x = lower non-manual households in ED
X = total lower non-manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	22	960	0.022916	91	113	0.805309	0.018455
B	34	960	0.035416	76	110	0.690909	0.024469
C	80	960	0.083333	224	304	0.736842	0.061403
D	48	960	0.05	351	399	0.879699	0.043984
E	31	960	0.032291	242	273	0.886446	0.028624
F	5	960	0.005208	50	55	0.909090	0.004734
G	17	960	0.017708	119	136	0.875	0.015494
J	81	960	0.084375	490	571	0.858143	0.072405
K	37	960	0.038541	90	127	0.708661	0.027312
L	42	960	0.04375	195	237	0.822784	0.035996
M	23	960	0.023958	49	72	0.680555	0.016304
N	46	960	0.047916	115	161	0.714285	0.034226
O	33	960	0.034375	47	80	0.5875	0.020195
P	27	960	0.028125	64	91	0.703296	0.019780
Q	57	960	0.059375	137	194	0.706185	0.041929
R	42	960	0.04375	84	126	0.666666	0.029166
S	17	960	0.017708	50	67	0.746268	0.013215
T	62	960	0.064583	244	306	0.797385	0.051497
U	41	960	0.042708	169	210	0.804761	0.034370
V	32	960	0.033333	159	191	0.832460	0.027748
W	32	960	0.033333	108	140	0.771428	0.025714
X	50	960	0.052083	86	136	0.632352	0.032935
Y	29	960	0.030208	72	101	0.712871	0.021534
Z	34	960	0.035416	87	121	0.719008	0.025464
AA	38	960	0.039583	107	145	0.737931	0.029209
						int	0.756176
						iso	0.243823

int = interaction index
iso = isolation index

3) 1851 Skilled Manual

Key:

x = skilled manual households in ED
X = total skilled manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	46	2001	0.022988	67	113	0.592920	0.013630
B	46	2001	0.022988	64	110	0.581818	0.013375
C	111	2001	0.055472	193	304	0.634868	0.035217
D	218	2001	0.108945	181	399	0.453634	0.049421
E	149	2001	0.074462	124	273	0.454212	0.033821
F	30	2001	0.014992	25	55	0.454545	0.006814
G	45	2001	0.022488	91	136	0.669117	0.015047
J	297	2001	0.148425	274	571	0.479859	0.071223
K	46	2001	0.022988	81	127	0.637795	0.014661
L	111	2001	0.055472	126	237	0.531645	0.029491
M	28	2001	0.013993	44	72	0.611111	0.008551
N	59	2001	0.029485	102	161	0.633543	0.018680
O	20	2001	0.009995	60	80	0.75	0.007496
P	38	2001	0.018990	53	91	0.582417	0.011060
Q	77	2001	0.038480	117	194	0.603092	0.023207
R	52	2001	0.025987	74	126	0.587301	0.015262
S	30	2001	0.014992	37	67	0.552238	0.008279
T	139	2001	0.069465	167	306	0.545751	0.037910
U	92	2001	0.045977	118	210	0.561904	0.025834
V	101	2001	0.050474	90	191	0.471204	0.023783
W	63	2001	0.031484	77	140	0.55	0.017316
X	50	2001	0.024987	86	136	0.632352	0.015800
Y	45	2001	0.022488	56	101	0.554455	0.012469
Z	49	2001	0.024487	72	121	0.595041	0.014571
AA	59	2001	0.029485	86	145	0.593103	0.017487
						int	0.540417
						iso	0.459582

int = interaction index
iso = isolation index

4) 1851 Semi- / unskilled manual

Key:

x = semi- / unskilled manual households in ED
X = total semi- / unskilled manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	34	1359	0.025018	79	113	0.699115	0.017490
B	22	1359	0.016188	88	110	0.8	0.012950
C	95	1359	0.069904	209	304	0.6875	0.048059
D	130	1359	0.095658	269	399	0.674185	0.064491
E	88	1359	0.064753	185	273	0.677655	0.043880
F	20	1359	0.014716	35	55	0.636363	0.009365
G	67	1359	0.049300	69	136	0.507352	0.025012
J	180	1359	0.132450	391	571	0.684763	0.090697
K	33	1359	0.024282	94	127	0.740157	0.017972
L	83	1359	0.061074	154	237	0.649789	0.039685
M	15	1359	0.011037	57	72	0.791666	0.008738
N	52	1359	0.038263	109	161	0.677018	0.025905
O	16	1359	0.011773	64	80	0.8	0.009418
P	23	1359	0.016924	68	91	0.747252	0.012646
Q	50	1359	0.036791	144	194	0.742268	0.027309
R	26	1359	0.019131	100	126	0.793650	0.015183
S	18	1359	0.013245	49	67	0.731343	0.009686
T	104	1359	0.076526	202	306	0.660130	0.050517
U	76	1359	0.055923	134	210	0.638095	0.035684
V	54	1359	0.039735	137	191	0.717277	0.028501
W	39	1359	0.028697	101	140	0.721428	0.020703
X	28	1359	0.020603	108	136	0.794117	0.016361
Y	24	1359	0.017660	77	101	0.762376	0.013463
Z	36	1359	0.026490	85	121	0.702479	0.018608
AA	46	1359	0.033848	99	145	0.682758	0.023110
						int	0.685445
						iso	0.314554

int = interaction index
iso = isolation index

5) 1871 Upper Non-manual

Key:

x = upper non-manual households in ED
X = total upper non-manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	10	170	0.058823	105	115	0.913043	0.053708
B	7	170	0.041176	162	169	0.958579	0.039470
C	17	170	0.1	340	357	0.952380	0.095238
D	2	170	0.011764	274	276	0.992753	0.011679
E	4	170	0.023529	223	227	0.982378	0.023114
F	2	170	0.011764	141	143	0.986013	0.011600
G	35	170	0.205882	234	269	0.869888	0.179094
H	3	170	0.017647	30	33	0.909090	0.016042
J	4	170	0.023529	548	552	0.992753	0.023358
K	9	170	0.052941	204	213	0.957746	0.050704
L	1	170	0.005882	160	161	0.993788	0.005845
M	21	170	0.123529	131	152	0.861842	0.106462
N	3	170	0.017647	275	278	0.989208	0.017456
O	9	170	0.052941	107	116	0.922413	0.048833
P	1	170	0.005882	101	102	0.990196	0.005824
Q	5	170	0.029411	160	165	0.969696	0.028520
R	5	170	0.029411	160	165	0.969696	0.028520
S	2	170	0.011764	201	203	0.990147	0.011648
T	1	170	0.005882	132	133	0.992481	0.005838
U	1	170	0.005882	166	167	0.994011	0.005847
V	4	170	0.023529	201	205	0.980487	0.023070
W	8	170	0.047058	130	138	0.942028	0.044330
X	8	170	0.047058	89	97	0.917525	0.043177
Y	4	170	0.023529	113	117	0.965811	0.022724
Z	2	170	0.011764	102	104	0.980769	0.011538
AA	2	170	0.011764	129	131	0.984732	0.011585
						int	0.925238
						iso	0.074761

int = interaction index
iso = isolation index

6) 1871 Lower non-manual

Key:

x = lower non-manual households in ED
X = total lower non-manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	24	1107	0.021680	91	115	0.791304	0.017155
B	64	1107	0.057813	105	169	0.621301	0.035919
C	140	1107	0.126467	217	357	0.607843	0.076872
D	42	1107	0.037940	234	276	0.847826	0.032166
E	25	1107	0.022583	202	227	0.889867	0.020096
F	17	1107	0.015356	126	143	0.881118	0.013531
G	68	1107	0.061427	201	269	0.747211	0.045899
H	9	1107	0.008130	24	33	0.727272	0.005912
J	121	1107	0.109304	431	552	0.780797	0.085344
K	58	1107	0.052393	155	213	0.727699	0.038126
L	23	1107	0.020776	138	161	0.857142	0.017808
M	56	1107	0.050587	96	152	0.631578	0.031949
N	55	1107	0.049683	223	278	0.802158	0.039854
O	59	1107	0.053297	57	116	0.491379	0.026189
P	32	1107	0.028906	70	102	0.686274	0.019838
Q	37	1107	0.033423	128	165	0.775757	0.025928
R	66	1107	0.059620	99	165	0.6	0.035772
S	12	1107	0.010840	191	203	0.940886	0.010199
T	13	1107	0.011743	120	133	0.902255	0.010595
U	21	1107	0.018970	146	167	0.874251	0.016584
V	20	1107	0.018066	185	205	0.902439	0.016304
W	32	1107	0.028906	106	138	0.768115	0.022203
X	39	1107	0.035230	58	97	0.597938	0.021065
Y	26	1107	0.023486	91	117	0.777777	0.018267
Z	17	1107	0.015356	87	104	0.836538	0.012846
AA	31	1107	0.028003	100	131	0.763358	0.021376
						int	0.717811
						iso	0.282188

int = interaction index
iso = isolation index

7) 1871 Skilled Manual

Key:

x = skilled manual households in ED
X = total skilled manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	41	1856	0.022090	74	115	0.643478	0.014214
B	64	1856	0.034482	105	169	0.621301	0.021424
C	117	1856	0.063038	240	357	0.672268	0.042379
D	111	1856	0.059806	165	276	0.597826	0.035768
E	128	1856	0.068965	99	227	0.436123	0.030077
F	57	1856	0.030711	86	143	0.601398	0.018469
G	99	1856	0.053340	170	269	0.63197	0.033709
H	7	1856	0.003771	26	33	0.787878	0.002971
J	229	1856	0.123383	323	552	0.585144	0.072197
K	67	1856	0.036099	146	213	0.685446	0.024744
L	50	1856	0.026939	111	161	0.689440	0.018573
M	55	1856	0.029621	97	152	0.638157	0.018929
N	107	1856	0.057862	171	278	0.615107	0.035461
O	35	1856	0.018857	81	116	0.698275	0.013167
P	42	1856	0.022629	60	102	0.588235	0.013311
Q	82	1856	0.044103	83	165	0.503030	0.022224
R	59	1856	0.031788	106	165	0.642424	0.020421
S	70	1856	0.037715	133	203	0.655172	0.024710
T	49	1856	0.026400	84	133	0.631578	0.016674
U	51	1856	0.027478	116	167	0.694610	0.019086
V	104	1856	0.056034	101	205	0.492682	0.027607
W	43	1856	0.023168	95	138	0.688405	0.015907
X	29	1856	0.015625	68	97	0.701030	0.010953
Y	51	1856	0.027474	66	117	0.564102	0.015500
Z	58	1856	0.03125	46	104	0.442307	0.013822
AA	51	1856	0.027474	80	131	0.610687	0.016780
						int	0.599097
						iso	0.400902

int = interaction index
iso = isolation index

8) 1871 Semi- / unskilled manual

Key:

x = semi- / unskilled manual households in ED
X = total semi- /unskilled manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	40	1661	0.024081	75	115	0.652173	0.015705
B	34	1661	0.020469	135	169	0.798816	0.016351
C	83	1661	0.049969	274	357	0.767507	0.038352
D	121	1661	0.072847	155	276	0.561594	0.040910
E	70	1661	0.042143	157	227	0.691629	0.02914
F	67	1661	0.040337	76	143	0.531468	0.021437
G	67	1661	0.040337	202	269	0.750929	0.030290
H	14	1661	0.008428	19	33	0.575757	0.004852
J	198	1661	0.119205	354	552	0.641304	0.076446
K	79	1661	0.047561	134	213	0.629107	0.029921
L	87	1661	0.052378	74	161	0.459627	0.024074
M	20	1661	0.012040	132	152	0.868421	0.010456
N	113	1661	0.068031	165	278	0.593525	0.040378
O	13	1661	0.007826	103	116	0.887931	0.006949
P	27	1661	0.016255	75	102	0.735294	0.011952
Q	41	1661	0.024683	124	165	0.751515	0.018550
R	41	1661	0.024925	124	165	0.751515	0.018344
S	119	1661	0.071643	84	203	0.413793	0.029645
T	70	1661	0.042143	63	133	0.473684	0.019962
U	94	1661	0.056594	73	167	0.437125	0.024738
V	77	1661	0.046357	128	205	0.624390	0.028945
W	55	1661	0.033112	83	138	0.601449	0.019539
X	21	1661	0.012642	76	97	0.783555	0.009905
Y	36	1661	0.021673	81	117	0.692307	0.015004
Z	27	1661	0.016255	77	104	0.740384	0.012035
AA	47	1661	0.028296	84	131	0.641221	0.018144
						int	0.61262
						iso	0.387373

int = interaction index
iso = isolation index

9) 1891 Upper non-manual

Key:

x = upper non-manual households in ED
X = total upper non-manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	9	221	0.040723	98	107	0.915887	0.037298
B	1	221	0.004524	116	117	0.991452	0.004486
C	18	221	0.081447	353	371	0.951482	0.077496
D	2	221	0.009049	302	304	0.993421	0.008990
E	1	221	0.004524	309	310	0.996774	0.004510
F	62	221	0.280542	431	493	0.874239	0.245261
G	38	221	0.171945	250	288	0.868055	0.149258
H	7	221	0.031674	136	143	0.951048	0.030123
J	2	221	0.00904	586	588	0.996598	0.009018
K	2	221	0.009049	214	216	0.990740	0.008965
L	1	221	0.004524	141	142	0.992957	0.004493
M	11	221	0.049773	118	129	0.914728	0.045482
N	2	221	0.009049	250	252	0.992063	0.008977
O	10	221	0.045248	160	170	0.941176	0.042587
P	0	221	0	106	106	1	0
Q	2	221	0.009049	180	182	0.989010	0.008950
R	1	221	0.004524	101	102	0.990196	0.004480
S	0	221	0	133	133	1	0
T	0	221	0	144	144	1	0
U	1	221	0.004524	143	144	0.993055	0.004493
V	1	221	0.004524	204	205	0.995121	0.004502
W	8	221	0.036199	132	140	0.942857	0.034130
X	3	221	0.013574	110	113	0.973451	0.013214
Y	1	221	0.004524	109	110	0.990909	0.004483
Z	1	221	0.004524	91	92	0.989130	0.004475
AA	1	221	0.004528	89	90	0.988888	0.004474
BB	36	221	0.162895	169	205	0.824390	0.134289
						int	0.894493
						iso	0.105507

int = interaction index
iso = isolation index

10) 1891 Lower non-manual

Key:

x = lower non-manual households in ED
X = total lower non-manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	25	1451	0.017229	82	107	0.766355	0.013203
B	62	1451	0.042729	55	117	0.470085	0.020086
C	163	1451	0.112336	208	371	0.56064	0.062981
D	32	1451	0.022053	272	304	0.894736	0.019733
E	28	1451	0.019297	282	310	0.909677	0.017554
F	194	1451	0.133700	299	493	0.606490	0.081088
G	148	1451	0.101998	140	288	0.486111	0.049582
H	78	1451	0.053756	65	143	0.454545	0.024434
J	69	1451	0.047553	519	588	0.882653	0.041973
K	53	1451	0.036526	163	216	0.754629	0.027564
L	17	1451	0.011716	125	142	0.880281	0.010313
M	36	1451	0.024810	93	129	0.720930	0.017886
N	52	1451	0.035837	200	252	0.793650	0.028442
O	96	1451	0.066161	74	170	0.435294	0.028799
P	27	1451	0.018607	79	106	0.745283	0.01386
Q	26	1451	0.017918	156	182	0.857142	0.015358
R	58	1451	0.039972	44	102	0.431372	0.017241
S	12	1451	0.008270	121	133	0.909774	0.007523
T	11	1451	0.007580	133	144	0.923611	0.007001
U	16	1451	0.011026	128	144	0.888888	0.009801
V	22	1451	0.015161	183	205	0.892682	0.01353
W	26	1451	0.017918	114	140	0.814285	0.014590
X	34	1451	0.023432	79	113	0.699115	0.016381
Y	17	1451	0.011716	93	110	0.845445	0.009994
Z	16	1451	0.011026	76	92	0.826086	0.009109
AA	10	1451	0.006891	80	90	0.888888	0.006126
BB	123	1451	0.084769	82	205	0.4	0.033907
						int	0.617995
						iso	0.382005

int = interaction index
iso = isolation index

11) 1891 Skilled manual

Key:

x = skilled manual households in ED
X = total skilled manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	34	1621	0.020974	73	107	0.682242	0.014309
B	32	1621	0.019740	85	117	0.726495	0.014348
C	84	1621	0.051819	287	371	0.773584	0.040087
D	75	1621	0.046267	229	304	0.753289	0.034998
E	137	1621	0.08451	173	310	0.558064	0.047165
F	97	1621	0.059839	396	493	0.803245	0.048065
G	74	1621	0.045650	214	288	0.743055	0.033921
H	37	1621	0.022825	106	143	0.741258	0.016919
J	236	1621	0.145589	352	588	0.598639	0.087155
K	71	1621	0.043800	145	216	0.671262	0.029402
L	48	1621	0.029611	94	142	0.661971	0.019601
M	42	1621	0.025909	87	129	0.674418	0.017414
N	80	1621	0.049352	172	252	0.682539	0.033684
O	49	1621	0.030228	121	170	0.711764	0.021515
P	39	1621	0.024059	67	106	0.632075	0.015207
Q	59	1621	0.036397	123	182	0.675824	0.024598
R	58	1621	0.035783	44	102	0.431372	0.015434
S	34	1621	0.020974	99	133	0.744360	0.015612
T	31	1621	0.019123	113	144	0.784722	0.015007
U	33	1621	0.020357	111	144	0.770833	0.015692
V	69	1621	0.042566	136	205	0.663414	0.028239
W	27	1621	0.016656	113	140	0.807142	0.013444
X	41	1621	0.025293	72	113	0.637168	0.016115
Y	34	1621	0.020977	76	110	0.690909	0.014491
Z	46	1621	0.028377	46	92	0.5	0.014188
AA	30	1621	0.018507	60	90	0.666666	0.012063
BB	24	1621	0.014805	181	205	0.882926	0.013072
						int	0.671940
						iso	0.328059

int = interaction index
iso = isolation index

12) 1891 Semi- / and unskilled manual

Key:

x = semi- / and unskilled manual households in ED
X = total semi- / and unskilled manual households in Perth
y = all other households in ED
t = number of households in ED
xi/X / yi/ti = index of interaction contributor for each ED. When all EDs are added city index is reached, the reciprocal of which is the index of isolation.

ED	x	X	xi / X	y	t	yi / ti	xi/X / yi/ti
A	39	2108	0.018500	68	107	0.635514	0.011757
B	22	2108	0.010436	95	117	0.811965	0.008474
C	106	2108	0.050284	265	371	0.714285	0.035917
D	195	2108	0.092504	109	304	0.358552	0.033189
E	144	2108	0.068311	166	310	0.535483	0.036579
F	140	2108	0.066413	353	493	0.716024	0.047553
G	28	2108	0.013282	260	288	0.902777	0.011991
H	21	2108	0.009962	122	143	0.853146	0.008499
J	281	2108	0.133301	307	588	0.522108	0.069598
K	90	2108	0.042694	126	216	0.583333	0.024905
L	76	2108	0.036053	66	142	0.464788	0.01675
M	40	2108	0.018975	89	129	0.689922	0.013091
N	118	2108	0.055977	134	252	0.531746	0.029765
O	15	2108	0.00711	155	170	0.911764	0.006488
P	40	2108	0.018975	66	106	0.622641	0.011814
Q	62	2108	0.029411	120	182	0.659340	0.019392
R	65	2108	0.030834	37	102	0.362745	0.011185
S	56	2108	0.026565	77	133	0.578947	0.015380
T	91	2108	0.043168	53	144	0.368055	0.015885
U	94	2108	0.044592	50	144	0.347222	0.015483
V	113	2108	0.053605	92	205	0.448780	0.024057
W	79	2108	0.037476	61	140	0.435714	0.016328
X	35	2108	0.016603	78	113	0.690265	0.011460
Y	58	2108	0.027514	52	110	0.472727	0.013006
Z	29	2108	0.013751	63	92	0.684726	0.009426
AA	49	2108	0.023244	41	90	0.455555	0.010589
BB	22	2108	0.010436	183	205	0.892682	0.009316
						int	0.537870
						iso	0.462130

int = interaction index
iso = isolation index

APPENDIX E - Chi-square values for Edinburgh

	1851			1871			1891		
	OBS	EXP	Dev.%	OBS	EXP	Dev.%	OBS	EXP	Dev.%
Grange									
UNM	2	3.14	-36	20	5.7	250	32	5.3	503
LNM	17	10.1	68	51	22.4	127	54	27.5	96
SM	8	18.9	-57	15	34.5	-56	9	30.7	-70
SUM	20	14.9	34	8	31.3	-74	3	34.5	-91
M'side									
UNM	5	4.1	21	13	5.2	150	48	7.4	548
LNM	22	13.3	65	34	20.7	64	61	38.2	59
SM	20	15	33	26	32	-18	19	42.7	-55
SUM	15	19.6	-23	14	29	-51	8	47.8	-83
C'land Street									
UNM	16	11	45	7	7.5	-6	11	15.9	-30
LNM	45	35.2	27	38	29.7	27	46	72.3	-36
SM	57	66	-13	47	46	2	132	81.1	62
SUM	46	51.8	-0.11	33	41.7	-20	69	90.7	-23
Royal Circus									
UNM	40	8.4	376	44	9	388	61	8.3	634
LNM	48	26.8	79	50	25.5	96	52	42.9	21
SM	22	50.2	-56	33	54.8	-39	31	48	-35
SUM	15	39.4	-61	22	49.6	-55	9	53.8	-83
Ramsay Close									
UNM	0	9.9	-100	1	6.4	-84	0	5.5	-100
LNM	12	31.9	-62	8	22.5	-64	3	28.9	-89
SM	71	60	18	48	39.4	21	38	32.3	17
SUM	66	47	40	50	35.7	40	62	36.3	70
F'bridge									
UNM	2	104	-98	2	10.8	-81	0	14.4	-100
LNM	31	33.4	-7	24	42.8	-43	13	75.3	-82
SM	52	62.8	-17	75	66.3	13	131	84.6	54
SUM	71	49.4	43	79	60.1	31	125	94.7	31
Colonies									
UNM				14	14.2	-1	8	12.3	-34
LNM				80	56.2	42	60	64.5	-6
SM				112	87	28	132	72.3	82
SUM				30	78.6	-61	30	80.8	-62

key

Obs - observed value of a social status group in ED
Exp - expected value (after chi-square calculation)
Dev.% - percentage deviance between observed and expected values.

APPENDIX F - Chi square calculations for Perth

1) Upper non-manual

			1851			1871			1891
ED	obs	exp	dev%	obs	exp	dev%	obs	exp	dev%
A	11	3.7	197.30	10	4.1	143.90	9	4.4	104.55
B	8	3.6	122.22	7	6	16.67	1	4.8	-79.17
C	18	9.9	81.82	17	13.3	27.82	18	15.2	18.42
D	3	13	-76.92	2	9.8	-79.59	4	12.4	-67.74
E	5	8.9	-43.82	4	8	-50	2	12.7	-84.25
F	0	1.8	-100	2	5.1	-60.78	62	20.2	206.93
G	7	4.5	55.56	35	9.5	268.42	38	11.8	222.03
H	0	0	0	3	1.2	150	7	5.9	18.64
J	13	18.7	-30.48	4	19.5	-79.49	2	24.1	-91.70
K	11	4.2	161.90	9	7.5	20	2	8.8	-77.27
L	1	7.8	-87.18	1	5.7	-82.46	1	5.8	-82.76
M	6	2.4	150	21	5.4	288.89	11	5.3	107.55
N	4	5.3	-24.53	3	9.8	-69.39	2	10.3	-80.58
O	11	2.6	323.08	9	4.1	119.51	10	7	42.86
P	3	3	0	1	3.6	-72.22	0	4.3	-100
Q	10	6.3	58.73	5	5.8	-13.79	2	6.1	-67.21
R	6	4.1	46.34	5	6	-16.67	1	7.5	-86.67
S	2	2.2	-9.09	2	7.2	-72.22	0	4.2	-100
T	1	10	-90	1	4.7	-78.72	0	5.4	-100
U	1	6.9	-85.51	1	5.9	-83.05	1	5.9	-83.05
V	4	6.2	-35.48	4	7.2	-44.44	1	8.4	-88.10
W	6	4.6	30.43	8	4.9	63.27	8	5.7	40.35
X	8	4.5	77.78	8	3.4	135.29	3	4.6	-34.78
Y	3	3.3	-9.09	4	4.1	-2.44	1	4.5	-77.78
Z	2	4	-50	2	3.7	-45.95	1	3.8	-73.68
AA	2	4.7	-57.45	2	4.6	-56.52	1	3.7	-72.97
BB			0	0	0	0	36	8.4	328.57

key

Obs - observed value of a social status group in ED
Exp - expected value (after chi-square calculation)
Dev% - percentage deviance between observed and expected values.

2) Lower non-manual

ED	obs	exp	dev%	obs	exp	dev%	obs	exp	dev%
A	22	24.3	-9.47	24	26.9	-10.78	25	28.8	-13.19
B	34	23.7	43.46	64	39.6	61.62	62	31.4	97.45
C	80	65.4	22.32	160	88.3	81.20	163	99.7	63.49
D	48	85.8	-44.06	42	64.6	-34.98	32	81.7	-60.83
E	31	58.7	-47.19	25	53.1	-52.92	28	83.3	-66.39
F	5	11.8	-57.63	17	33.5	-49.25	194	132.5	46.42
G	17	29.2	-41.78	68	63	7.94	148	77.4	91.21
H	0	0	0	9	7.7	16.88	78	38.4	103.13
J	81	123	-33.99	121	129.2	-6.35	69	158	-56.33
K	37	27.3	35.53	58	49.9	16.23	53	58	-8.62
L	42	50.9	-17.49	23	37.7	-38.99	17	38.2	-55.50
M	23	15.5	48.39	56	35.6	57.30	36	34.7	3.75
N	46	34.6	32.95	55	65.1	-15.51	52	67.7	-23.19
O	33	17.2	91.86	59	27.2	116.91	96	45.7	110.07
P	27	19.6	37.76	32	23.9	33.89	27	28.5	-5.26
Q	57	41.7	36.69	37	38.6	-4.15	26	40	-35
R	42	27.1	54.98	66	40	65	55	48.9	12.47
S	17	14.4	18.06	12	47.5	-74.74	12	27.4	-56.20
T	62	65.8	-5.78	13	31.1	-58.20	11	35.7	-69.19
U	41	45.1	-9.09	21	39.1	-46.29	16	38.7	-58.66
V	32	41.1	-22.14	20	48	-58.33	22	55.1	-60.07
W	32	30.1	6.31	32	32.3	-0.93	26	37.6	-30.85
X	50	29.2	71.23	39	22.7	71.81	34	30.4	11.84
Y	29	21.7	33.64	26	27.4	-5.11	17	29.6	-42.57
Z	34	26	30.77	17	24.4	-30.33	16	24.7	-35.22
AA	38	31.2	21.79	31	30.7	0.98	10	24.2	-58.68
BB	0	0	0	0	0	0	123	55.1	123.23

key

Obs - observed value of a social status group in ED
Exp - expected value (after chi-square calculation)
Dev% - percentage deviance between observed and expected values.

3) Skilled manual

ED	obs	exp	dev%	obs	exp	dev%	obs	exp	dev%
A	46	50.6	-9.09	41	44.3	-7.45	34	32.1	5.92
B	46	49.3	-6.69	64	65.2	-1.84	32	35.1	-8.83
C	111	136.2	-18.50	117	145	-19.53	84	111.4	-24.60
D	218	178.8	21.92	110	106	3.38	75	91.2	-17.76
E	149	122.3	21.83	128	87.5	46.29	137	93	47.31
F	30	24.6	21.95	57	55.1	3.45	97	148	-34.46
G	45	60.9	-26.11	99	104	-4.53	74	86.4	-14.35
H	0	0	0	7	12.7	-44.88	37	42.9	-13.75
J	297	255.8	16.11	229	213	7.61	236	176.5	33.71
K	46	56.9	-19.16	67	82.1	-18.39	71	64.8	9.57
L	111	106.2	4.52	50	62.1	-19.48	48	42.6	12.68
M	28	32.2	-13.04	55	58.6	-6.14	42	38.7	8.53
N	59	72.1	-18.17	107	107	-0.19	80	75.6	5.82
O	20	35.8	-44.13	35	44.7	-21.70	49	51	-3.92
P	38	40.8	-6.86	42	39.3	6.87	39	31.8	22.64
Q	77	86.9	-11.39	82	63.6	28.93	59	44.7	31.99
R	52	56.5	-7.96	59	65.9	-10.47	58	54.6	6.23
S	30	30	0	70	78.3	-10.60	34	30.6	11.11
T	139	137.1	1.39	49	51.3	-4.48	31	39.9	-22.31
U	92	94.1	-2.23	51	64.4	-20.81	33	43.2	-23.61
V	101	85.6	17.99	104	79	31.65	69	61.5	12.20
W	63	62.7	0.48	43	53.2	-19.17	27	42	-35.71
X	50	60.9	-17.90	29	37.4	-22.46	41	33.9	20.94
Y	45	45.3	-0.66	51	45.1	13.08	34	33	3.03
Z	49	54.2	-9.59	58	40.1	44.64	46	27.6	66.67
AA	59	65	-9.23	51	50.5	0.99	30	27	11.11
BB	0	0	0	0	0	0	24	61.5	-60.98

key

Obs - observed value of a social status group in ED
Exp - expected value (after chi-square calculation)
Dev% - percentage deviance between observed and expected values.

4) Semi- / unskilled manual

ED	obs	exp	dev%	obs	exp	dev%	act	exp	dev%
A	34	34.4	-1.16	40	39.7	0.76	39	41.8	-6.70
B	22	33.5	-34.33	34	58.3	-41.68	22	45.7	-51.86
C	95	92.5	2.70	83	130	-36.20	106	144.8	-26.80
D	130	121	7.08	121	95.2	27.10	195	118.7	64.28
E	88	83.1	5.90	70	78.3	-10.60	144	121	19.01
F	20	16.7	19.76	67	49.3	35.90	140	192.4	-27.23
G	67	41.4	61.84	67	92.8	-27.80	28	112.4	-75.09
H	0	0	0	14	11.4	22.81	21	55.8	-62.37
J	180	173	3.81	198	190	3.99	281	229.5	22.44
K	33	38.7	-14.73	79	73.5	7.48	90	84.3	6.76
L	83	72.1	15.12	87	55.6	56.47	76	55.4	37.18
M	15	21.9	-31.51	20	52.5	-61.90	40	50.4	-20.63
N	52	49	6.12	113	95.9	17.83	118	98.4	19.92
O	16	24.3	-34.16	13	40	-67.50	15	66.4	-77.41
P	23	27.7	-16.97	27	35.2	-23.30	40	41.4	-3.38
Q	50	59	-15.25	41	56.9	-27.94	62	58.2	6.53
R	26	38.3	-32.11	41	59	-30.51	65	71	-8.45
S	18	20.4	-11.76	119	70	70	56	39.8	40.70
T	104	93.1	11.71	70	45.9	52.51	91	51.9	75.34
U	76	63.9	18.94	94	57.6	63.19	94	56.2	67.26
V	54	58.1	-7.06	77	70.7	8.91	113	80	41.25
W	39	42.6	-8.45	55	47.6	15.55	79	54.6	44.69
X	28	41.4	-32.37	21	33.5	-37.31	35	44.1	-20.63
Y	24	30.7	-21.82	36	40.4	-10.89	58	42.9	35.20
Z	36	36.8	-2.17	27	35.9	-24.79	29	35.9	-19.22
AA	46	44.1	4.31	47	45.2	3.98	49	35.1	39.60
BB	0	0	0	0	0	0	22	80	-72.50

key

Obs - observed value of a social status group in ED
Exp - expected value (after chi-square calculation)

Dev% - percentage deviance between observed and expected values.

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